
Have a little faith in Me
Motivating teaching and student motivation in vocational education and training
Miriam Cents – Boonstra

# Have a Little Faith in Me

**Motivating teaching and student motivation in vocational education and training**

**Colophon**

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*Even if we die young we had a damn good run...(Bron: Sheppard (2019), Die Young)*

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# Chapter 1

## General introduction

Vocational Education and Training (VET) prepares students for the labour market and provides them a with stepping stone into higher education. Despite the importance of VET-education for the labour market (de Bruijn, Billet, & Onstenk, 2017) and higher education, VET-students worldwide seem to experience motivational challenges in persisting at school (Billett et al., 2010; Brahm, Euler, & Steingruber, 2014; Nielsen & Tanggaard, 2015; Wallace, 2013; White & Laczik, 2016). These challenges could severely impact students' opportunities in successfully building their careers (Benito & Alegro, 2012; Brahm et al., 2014; White & Laczik, 2016). This is no different for Dutch VET-students. There are strong indicators that they also experience challenges in their motivation to persist in school (Elffers, 2011; Inspectie van het Onderwijs, 2015; Vugteveen, Timmermans, Korpershoek, Van Rooijen, M, & Opdenakker, 2016). Poor motivation is an important contributing factor to truancy and early school leaving, which can lead to short-term risks such as low self-esteem and underdevelopment of talent (Cuelenaere, van Zutphen, van der Aa, Willemsen, & Wilkens, 2009; Veld, Korving, Hamdan, &Van der Steen, 2006), but also long-term risks such as unemployment and crime (Cuelenaere et al., 2009, Inspectie van het Onderwijs, 2014).

In a large national survey, Dutch VET-students indicated that they experience a substantial number of their lessons as unmotivating (JOB, 2016, 2018). Thus, it seems that there is room for improvement when it comes to the engaging nature of lessons, at least according to the students themselves. Research on educational programmes designed to foster students' motivation suggests that a promising way to foster students' general motivation for school is to better engage them within lessons (Fix, 2018; Nicholson & Putwain, 2018; Van Der Veen, Peetsma, Triesscheijn, & Karssen, 2013). Factors that help to increase students' engagement within lessons are a good relationship with teachers, a clear structure, a focus on students' personal development and allowing students to feel in control of their own learning process (Attwood, Croll, & Hamilton, 2003; Brahm et al., 2014; Fix, 2018; Van Uden, Ritzen, & Pieters, 2014). Similarly, research has shown that the way teachers interact with their students within lessons plays an important role in keeping students engaged within lessons, which may have a positive impact on students' general motivation for school and, eventually, willingness to persist within VET (Attwood et al., 2003; Nicholson & Putwain, 2018).

The key role of teachers in motivating and engaging students within lessons is also supported by an abundance of research inspired by the Self-Determination Theory (SDT; Ryan & Deci, 2000a), which demonstrates that teachers can foster their students' motivation with certain teaching behaviours (Hamre et al., 2013; Jang, Kim, & Reeve, 2016; Jang, Reeve, & Deci, 2010; Nguyen, Cannata, & Miller, 2018; Reeve, Jang, Carrell, Jeon, & Barch, 2004; Reeve & Tseng, 2011; Reeve et al., 2004; Van den Berghe, Cardon, Tallir, Kirk, & Haerens, 2016). While the claim that motivating teaching is associated with positive student behaviours and outcomes is generally well supported, there is only limited research that focusses on how teachers specifically apply motivating teaching within lessons. In order to get a detailed understanding of the (micro) behaviours of teachers within lessons, how these teacher behaviours fluctuate within and across lessons and how they affect students' behaviours, observational research is needed.

This PhD project was initiated by the Graafschap College for VET in an attempt to scientifically investigate the everyday educational practices in the College, and to explore ways to further foster students' motivation for school and students' engagement within lessons. The goal of this project was to identify how teaching behaviours are related to students' motivation and engagement in the specific population of VET-students. To complement and expand on prior research, we applied innovative methodological approaches, such as a person-centred approach and a micro analytic approach, to gain more insight into the complex relationship between motivating teaching behaviours and different indicators of students' engagement. This fine-grained approach allowed us to move beyond trait-based summary accounts to investigate student and teaching behaviours and their fluctuations within and across lessons, and to study their situational dependency. This project hereby contributes to scientific knowledge while at the same time supporting schools and teachers by providing concrete recommendations on how to foster students' engagement within lessons. In this introductory chapter, I will first describe VET-students' educational setting in the Netherlands to provide the context within which the studies are situated. Second, I will elaborate on SDT, the theoretical framework that forms the basis of our studies. I will describe the SDT perspective on motivation and elaborate on the available SDT research that supports the idea that teachers foster their students' motivation in lessons. Finally, I will discuss the research aims and the scientific and practical goals of this dissertation.

## 1.1 | Context of This Study

### 1.1.1 Position of VET in the Educational System

The European Centre of Development of VET (Cedefop, 2020) broadly describes VET as 'education and training which aims to equip people with knowledge, know-how, skills and/or competences required in particular occupations or more broadly on the labour market' (Cedefop, 2014, p. 292). Between countries there are quite some differences in the degree to which VET is embedded in the educational system or exists of out-of-school in real-life education. Roughly three different variants can be distinguished. In countries such as the United Kingdom and the United States, qualifying for jobs is organised merely by employers and students learn on the job (de Bruijn et al., 2017). Other countries such as Sweden and Germany present a VET-system that has strong links to the labour market as well as to educational institutions. Within this 'dual system' approach students are offered both work-based VET (in a company) as well as school-based VET (in school). A third variant can be seen in Austria, Belgium and the Netherlands where all VET is embedded primarily within an educational context (in school) and not in a work context. With the Vocational Education Act in 1996, all existing types of VET in the Netherlands became fully government funded, and hundreds of vocational training centres were merged to about 50 large regional training centres (Regionale OpleidingsCentra: ROC's). At the same time a coherent national qualification structure was introduced for all vocational education courses (Cedefop, 2020). As a result, VET is highly institutionalised in the Netherlands and predominantly provided at large colleges (ROC's). Within these colleges most students are enrolled in the school-based track of their aspired vocation (80%), which generally includes roughly four days at school and one day on the job training with guidance from school. The other 20% of the students are enrolled in work-based tracks and have about four days training on the job and one day at school.

VET programmes are provided at four levels (Eegdeman, Meeten, & Van Klaveren, 2018). VET level 1 is the most practical level in which students can qualify to become an assistant employee within one year (e.g. within care and welfare: a care aide). In addition, VET level 2 is a qualification for employees (e.g. within care and welfare: supporting care and welfare) and VET level 3 is a qualification at the level of independent employee (e.g. within care and welfare: practical nurse). Lastly, the VET level 4 qualification is for specialised professionals (e.g. within care and welfare: nurse) and leads towards universities of applied science (i.e. higher education). Regarding the four levels of VET-education there is a cumulative build-up, which means that when a student enters VET level 1, but wants to obtain a level 4 degree he or she has to subsequently finish level 2 and 3 before starting level 4.

With regards to the content of vocational tracks there is a wide variation, ranging from tracks for vocations in health, welfare, culture and sport (e.g. nursing, social work, pedagogical workers or sports) to engineering and construction (plumbers, electricians or builders), environmental studies and food (e.g. animal welfare or agriculture) and economics, business, ICT and hospitality (e.g. hairdressing, logistics, entrepreneurship, administration or catering). However, the societal function of VET goes beyond just qualifying students for a specific vocation (de Bruijn et al., 2017). Within the Netherlands VET prepares students for their future in society and has a three-fold qualification obligation:

- for a vocation
- for higher education
- for good citizenship

Therefore, the curriculum of VET-students includes more than just vocational subjects and also includes generic subject such as Dutch, English, calculus and citizenship. The wide variety in VET-tracks transfers to an even wider range of vocational subjects within the curriculum of the approximately 500 different tracks. Often the teachers providing these vocational subjects come from professional practice, they have experience within the vocation and start teacher training on the job when they start as teachers. On the other hand, VET also attracts teachers that finish teacher education first and then start to work in VET. These teachers more often cover generic subjects as these often require a completed degree in teacher education. As such, VET-teachers have heterogeneous backgrounds related to a wide variety of vocational and generic subjects and their prior didactical and teacher training.

### 1.1.2 VET-student Population in the Netherlands

Just like the teachers, the population of VET-students is also very heterogeneous with large variations among students in type and level of prior education, age, socio-economic status (SES) and ethnic background (Elffers, 2011). Additionally, there is a high level of cognitive diversity as the four levels of vocational programmes are built on cognitive skills to different degrees. Regarding parental involvement, studies show that parents of VET-students are usually less involved in school than the parents of their peers in other tracks of upper secondary school (Bokdam, Tom, Berger, Smit, & van Rens, 2014). Prior research shows that VET-students with parents with low SES, lower parental involvement or an ethnic minority background, have a much higher chance of dropping out



(Elffers, 2011). In addition to the substantial proportion of VET-students with a disadvantaged background, research among 267.042 VET-students (more than 50% of the total vET-student population) showed that 38% of respondents suffer from mental health problems (JOB, 2016). Disabilities, such as dyslexia (37%), ADHD / ADD (19%) and mental health problems (8%), can negatively impact students' performance at school. In sum, among VET-students there is a higher percentage of at-risk students with either one or multiple student characteristics related to higher drop-out rates (Elffers, 2011).



### 1.1.3 Educational Context Leading Up to VET

From the start of Dutch primary school, when children are four years old, they are regularly monitored on their cognitive skills with the use of standardised tests. In the 7th and 8th grade of primary school, when children are about 11 to 12 years old, their cognitive skills are tested comprehensively to support teachers in formulating advice on the appropriate level for a student's secondary education. Within all these tests future VET-students will usually belong quite consistently to the low achievement group. Based on the test results and the teacher's track recommendation, children and their parents receive advice about the secondary school track that is most suitable for the child. In the case of future VET-students, at the age of 12 they predominantly receive advice to transfer to the lower tracks of secondary school (preparatory secondary vocational education: VMBO). Having a history of consistently belonging to the low achievement group (Peetsma & Van der Veen, 2015) can evoke feelings of being academically inadequate (Fuller & Macfadyen, 2012), which may negatively impact on students' motivation for school when starting VET.

After finishing VMBO, students are presented with a limited number of choices for educational tracks other than VET. In total, about 87% of the graduates of VMBO continue their education at VET (Vugteveen et al., 2016), usually around the age of 16. For the different levels of VET there are strict admission requirements that limit the amount of choice students in VMBO have regarding their level of entry. Schools do not often deviate from these admission requirements; exceptions for the choice in the level of VET mostly include students that start at a lower level than required, students are not often allowed to start their study at a higher level. Due to this selection and differentiation, students might not be allowed to enrol at the level they aspire to (Elfers, 2011).

In addition to having to make a choice regarding their level of entry, students also need to make a choice regarding the content of their future profession at a relatively young age (16 years; e.g., baker, hairdresser or nurse). Students from the economic track within VMBO can easily enter the economic track in VET, yet when they want to enter a different track, for instance the nursing track, there could be additional admission requirements that they must meet. So next to their level of entry, VET-students are also not completely free in making their choice but are restricted to sometimes limited options, which may prevent them from getting into their aspired vocation. Moreover, although formal education is only compulsory until the age of 16, students from 16 to 18 have an obligation to acquire at least a 'start qualification'. A start qualification is defined as a degree of higher secondary education or vocational education level 2. That means that after finishing VMBO, students are obliged by law to continue with a vocational training programme even if they would prefer not to do so (Eegdeman et al., 2018).

Yet, regarding students' motivation it is important that a student feels in place and has an attractive future perspective (Peetsma, 1992). Therefore, not being allowed to start in the desired track and having to choose a second or third best option may negatively impact students' motivation in VET.

### 1.1.4 The First Year of VET: VET- Students' Motivational Challenges and Educational Needs

In the previous sections I discussed how a proportion of VET-students could experience motivational challenge prior to their start in VET because of their disadvantaged backgrounds, prior negative school experiences and limited amount of choices regarding the level and content of their aspired vocation. Yet, aside from the factors that impact students' motivation *prior* to entering VET, just after entering VET there seem to be additional factors that may further challenge VET-students' motivation.

VET-colleges require students to make more independent and autonomous choices whilst providing them with less support (Verstegen & Severiens, 2007). This can make students feel lost in their new and larger educational context and may contribute to student perceptions that their needs are not being adequately addressed. This sentiment is reflected in the results of large-scale student surveys (JOB 2016, 2018, 2020) filled in by around half of the total VET-student population. The results of the 2016 study showed that less than half of the surveyed students (49%) were satisfied with how teachers motivate them during lessons, 23% did not feel challenged during lessons and 22% did not find the lessons relevant (JOB, 2016). In 2018, student opinions had hardly changed (JOB, 2018); about the same proportion of students was (un)satisfied with how their teachers tried to motivate them, the way they were challenged during lessons and the relevance of their lessons. In the JOB-monitor of 2020 the wording of the questions was changed, but still only 53% of the students were satisfied with their lessons and only 49% of the students thought that their lessons were relevant for their future.

Another very strong indicator suggesting that VET-students' educational needs are not being adequately met are VET-students' drop-out rates. In different countries students seem to struggle to persist in VET (Billett et al., 2010; Brahm et al., 2014; Vugteveen et al., 2016; White & Laczik, 2016). In the Netherlands, VET has the highest share of drop-out in education. In fact, among all Dutch students that drop out, 80% are VET-students (Bussemaker, 2016). About half of the students that drop out, do so during their first year (Elffers, 2011). Next to dropping out, a substantial proportion of students often switch between tracks. With regards to students' motivation in the first year, a significant number of students start with low motivation (Vugteveen, et al., 2016) and go to school predominantly because they have to (Prenzel, Kramer, & Drechsel, 2002). As such, there is an urgent need for VET-colleges and teachers to change this situation and foster their students' motivation to keep them from dropping-out. As colleges cannot impact students' structural or personal characteristics or prior negative school experiences, a theoretical framework is required that focusses on improving the educational context of school in such a way that teachers can foster students' motivation in the context of VET.



## 1.2 | The Theoretical Framework: SDT



VET's ambition is to train vocational specialists that take ownership of their own career with an emphasis on ongoing learning and development. Concepts such as empowering students as citizens and encouraging their personal development with a strong focus on self-determination, authenticity, personal identity and moral responsibility (Prenzel et al., 2002) are therefore considered crucial learning goals next to the qualification for a specific vocation. As such, VET has a pedagogical imperative to support students' motivation at school for life-long development. From a humanistic perspective, SDT embraces the assumption that all individuals have an innate and constructive tendency to be curious, to learn and to grow (Ryan & Deci, 2000a). SDT suggests that at their best, people are curious, strive for learning, learn new skills and apply their talents, which is exactly what VET-students need to do to become successful vocational specialists.

Yet, while SDT recognises that this proactive human drive for continuous development is innate, the SDT-theory recognizes that it does not happen automatically and that this proactive nature can be frustrated to an extent that individuals might reject growth and responsibility (Ryan & Deci, 2000a). To actualise their inherent potential, human beings need nurturing from social environments. Considering the motivational challenges of VET-students, their social context at school contains important contextual factors that either support or hinder their innate drive for ongoing development. At a macro level, students' motivation will go beyond school and is connected to how they in the future see themselves working within their aspired vocation. At a meso level, students have a particular general motivation to go to school and on the micro level students have a particular motivation to engage themselves within a specific lesson with a particular teacher. Ideally, as a social context, schools can provide a pedagogical context that supports VET-students' motivation for school in general (meso) and within lessons (micro) to support students in developing themselves to realise their full potential to work and to keep developing as vocational specialists (macro).

Considering SDT, social environments that support ongoing development by satisfying people's three innate psychological needs are the basis for self-determined and self-motivated behaviour (Ryan & Deci, 2000a). These three basic psychological needs are: autonomy (i.e. the freedom to be yourself), competence (i.e. feeling capable to act) and relatedness (i.e. experiencing close bonds; Ryan & Deci, 2000a, 2000b). If the social contexts in which people are embedded are responsive to their basic psychological needs, they provide the appropriate developmental support that is essential for positive motivation, enhanced performance and well-being (Ryan & Deci, 2000a). In contrast, if the social context fails to support or even thwarts people's psychological needs such that they experience frustration regarding autonomy (i.e. control), competence (i.e. chaos) and relatedness (i.e. coldness), this results in negative consequences with regard to well-being, motivation and performance (Ryan & Deci, 2000a). According to SDT, people's basic psychological needs are the primary 'building blocks' that foster human motivation (Stevens et al., 2004; Vansteenkiste et al., 2012). In line with our research goal, SDT considers motivation to be a context-dependent and dynamic concept (i.e. what motivates a person at any given time?) and not a unitary concept. This means that people will do different tasks for different reasons in different contexts. For example,

the motivation for brushing your teeth will be quite different from your motivation for graduating from school. SDT states that people's motivation to act varies not only in terms of quantity (i.e., how much), but also in terms of the quality of the motivation (i.e., what type). As such, people can have different reasons that differ in quality of motivation for one action. According to SDT, the quality of motivation is dependent on the extent to which the motivation underlying specific behaviour comes from people's own interests and values (internal), or from pressure or guilt (external; Ryan & Deci, 2000a).

When a social context or person attempts to foster behaviour in others, the other person's motives for that behaviour can range from unwillingness to passive compliance to active commitment (Ryan & Deci, 2000a). SDT indicates that these different types of motivation reflect the internalisation and integration of the requested behaviour. As such SDT distinguishes different types of external motivation that reflect the degrees of people taking in the regulation (internalisation) and transferring the regulation to something that emanates from oneself (integration; Ryan & Deci, 2000a). With regards to the quality of motivation SDT distinguishes three broader categories of types of motivation; autonomous motivation, controlled motivation and amotivation. According to SDT, the highest quality of motivation is autonomous motivation (i.e., intrinsic motivation, integrated and identified regulation). In contrast, controlled motivation (i.e., external and introjected regulation) and amotivation are described as low quality motivation. As such, another important pedagogical imperative for VET-schools and teachers (social context) is to find ways to support VET-students' basic psychological needs (Hardre & Reeve, 2003), to be able to foster students' autonomous motivation for school and within lessons. SDT has been validated within many different contexts such as religion, health care, sports, work, psychotherapy and, most relevant to our research, also within education (Ryan & Deci, 2000a).

### 1.2.1 SDT in Classrooms

**Students.** When we apply the theoretical concept of motivation to the context of students, we can identify different motives for students to persist in school or engage themselves within lessons.

According to SDT students with the highest quality of motivation have autonomous reasons to go to school and engage themselves within lessons. *Intrinsically motivated* students study for reasons that are inherent to the activity, such as satisfaction and enjoyment (Ratelle, Guay, Vallerand, Larose, & Senecal, 2007). These students engage within lessons from sheer passion or interest. With *integrated regulation*, students' reasons for studying are inherent to their identity as students: it is part of their nature and value system as students (Ratelle et al., 2007). Students with *identified regulations* find their education meaningful and relevant for their future. These students engage in skills training to learn nursing procedures as they find the topic relevant for their future as a nurse. Although SDT indicates that intrinsic motivation resembles the highest quality of motivation, many of the tasks that teachers want their students to perform are not inherently interesting or enjoyable. Therefore, students will not always be intrinsically motivated (Ryan & Deci, 2000a, 2000b). Yet, in the case of integrated or identified regulation, they will still willingly put effort into the task at hand because they fully endorse why it is valuable for them. Therefore, when we speak of wanting





to foster students' motivation in this dissertation, we mean their autonomous motivation, comprising the following three regulations: intrinsic motivation, integrated regulation and identified regulation, as these represent the highest quality of students' motivation.

In contrast, lower quality of motivation is reflected in students' controlled or amotivated reasons to go to school or to get engaged in lessons. With regards to controlled motivation, students with *introjected regulation* will engage in lessons, because they experience internal pressure. For example, they feel guilt towards themselves if they do not engage. Furthermore, *external regulation* means that students' behaviours are initiated and controlled by external contingencies of rewards and punishment. For instance, students might only engage themselves when they are graded. In addition, *amotivation* is characterised by a complete lack of motivation; within lessons, amotivated students are not involved in the lesson at all and seem indifferent or even apathic (Prenzel et al., 2002).

Students can adopt new behavioural regulations at any point based on their prior experiences and their social context. For example, students can get involved in the lessons because they want a good grade but also experience the lessons as autonomously motivating because of the teacher. Students' motivation to study can also be the result of a mix of different reasons: they can participate in lessons to receive a good grade (i.e. external regulation) and find the subject relevant for their future (identified regulation).

Inside the classroom, it is impossible to observe students' reasons for engaging themselves as this is mostly an intrapersonal process. Yet, indicators of students' motivation that can be observed are the level of energy and the intensity of their behaviours as related to their engagement in class (Wigfield et al., 2015). According to SDT, student engagement expresses the underlying quality of students' motivation (Reeve, 2012). As such, student engagement in lessons is an observable manifestation of the quality of students' motivation within lessons (Skinner & Belmont, 1993). Inside the classroom, students with autonomous reasons to get engaged will more likely be enthusiastic, interested and ask questions, actively contribute to activities, try hard, persist and show initiative towards their teacher and peers (Skinner & Belmont, 1993). In contrast, students with controlled reasons to get engaged will ask more controlled questions, for instance when a task will be graded for a test ('Do we need to know this for the test?'). Furthermore, these students could easily give up when challenged, be passive, be bored, complain about assignments that are not graded and disobey the school rules (Skinner & Belmont, 1993). Students with amotivation will more likely display a complete lack of engagement in class and just hang back in their chair.

**Schools and Teachers.** According to SDT schools are a very important social context for children's learning and as such have a significant impact on achievement outcomes and well-being during childhood, adolescence, and emerging adult life (Ryan & Deci, 2016). From the perspective of SDT, schools should focus on developing students' quality of motivation, engagement and wellbeing, in other words, focus on the development of the whole student instead of focussing predominantly on cognitive learning and know-

ledge of specific subject areas (Ryan & Deci, 2016). This focus on students' development requires schools to support students' basic needs for autonomy, competence and relatedness. By providing a social climate that supports students' needs schools can make a positive impact on students' development whereas thwarting their needs will likely have a negative impact on students' development.

Within the social context of school, SDT suggests that certain classroom climates really spark students' interest in learning while others smother it (Ryan & Deci, 2016). Therefore, teachers have an important role in establishing a supportive classroom climate within their lessons. SDT indicates that inside the classroom teachers can meet students' need for autonomy by providing autonomy support. By providing students with autonomy support, students will experience their engagement in learning as a self-chosen act that reflects their own interests, preferences and values (Stroet, Opdenakker, & Minnaert, 2013). In addition, students' need for competence can be met by offering structure that conduces feelings of competence. A teacher's provision of structure involves enhancing students' feelings of effectiveness and the belief that they are able to perform the task. Lastly, students' need for relatedness can be met by offering relatedness support (Hardre & Reeve, 2003). With relatedness support students experience a sense of closeness and friendship (i.e. need for relatedness), in other words, a mutually positive relationship with their teacher in their lessons. In sum, needs supportive teaching consists of a teacher's provision of autonomy support, structure and relatedness support.

In contrast, frustrating students' needs in SDT, often referred to as need-thwarting teaching, is thought to have a negative effect on students' motivation (Aelterman et al., 2018). Teachers can thwart students' need for autonomy by offering them control and using tactics to pressure students to act, think or feel in specific ways. Students' need for competency is thwarted by bringing chaos, which involves an awaiting or abandoning attitude from teachers. And lastly, cold teaching is that which thwarts students' need for relatedness and entails being unfriendly or even rejecting or excluding students. Within SDT, autonomy support, structure, relatedness support, control, chaos and cold teaching are often referred to as different teaching dimensions (Ryan & Deci, 2016).

**The Relationship between Motivating Teaching and Student Motivation.** Research based on SDT suggests that when students' needs for autonomy, competence and relatedness are met with need supportive teaching (autonomy support, structure and relatedness support) this is likely to result in high quality of motivation (Hardre & Reeve, 2003). In other words, when teachers use needs supportive behaviours in their lessons this should positively impact students' autonomous motivation and active, positive behavioural engagement in class. In contrast, thwarting the basic needs of students with controlling, chaotic or cold teaching will negatively impact students' quality of motivation (Ryan & Deci, 2016). When teachers use needs-thwarting behaviours, this will most likely result in students' controlled motivation or even amotivation and thus induce non or passive compliant engagement among students inside the classroom. Within this dissertation, we want to investigate the relation between needs supportive or needs thwarting teaching behaviours and students' motivations and behaviours related to engagement within lessons.



## 1.3 | Research on Student Motivation and (De)motivating Teaching from an SDT Perspective



In this section I discuss research from the perspective of SDT with regard to the main themes within this dissertation: student motivation and engagement, motivating teaching and the relation between the two.

### 1.3.1 Research on student motivation

Within SDT-based research, it is well established that students' autonomous motivation is related to positive student outcomes whereas students' controlled motivation is related to negative student outcomes. With regard to students' autonomous motivation, research showed relations with low dropout rates (Hardre & Reeve 2003; Vallerand, Fortier, & Guay 1997), increased persistence (Vallerand & Bissonnette, 1992) and higher academic performance (Barkoukis, Taylor, Chanal, & Ntoumanis, 2014). Furthermore, autonomous motivation is an important prerequisite for students' success in VET (Archambault, Janosz, Fallu, & Pagani, 2009; Rumberger & Lim, 2008; Wang & Fredricks, 2014) and their future long-term vocational opportunities (Abbott-Chapman, Martin, Ollington, Venn, Dwyer, & Gall, 2014). Controlled motivation in contrast, has been linked to negative outcomes such as school dropout (Vallerand, 1997), low school achievement (Barkoukis et al., 2014; Soenens & Vansteenkiste, 2005), high test anxiety and more procrastination (Vansteenkiste, Sierens, Soenens, Luyckx, & Lens, 2009).Yet so far, research on negative outcomes related specifically to VET-students' levels of controlled or amotivation is very limited.

SDT suggests that individuals have very different reasons for studying, assuming a large variability between students' motivations. With regard to VET-students, motives for studying can vary widely from girls that dreamed of becoming a hairdresser all their lives (highly autonomous) to students that chose any track as they felt obligated to continue their study (highly controlled). Additionally, there is also variability in the quality of motivations within persons. That is, students can have various motives for studying, combining different degrees of the six types of motivations, e.g. students studying from predominantly autonomous motives or students combining autonomous and controlled reasons for studying.  Recent SDT research applying a person-centred method has revealed that different subgroups of students can be distinguished with different combinations of motives for studying, resulting in different 'motivational profiles' (Hayenga & Corpus, 2010; Henderlong Corpus, Wormington, & Haimovitz, 2016; Ratelle et al., 2007; Vansteenkiste et al., 2009).

Applying this approach in samples of secondary, middle school and college students has identified four quite similar motivational profiles: (1) overall high scores on autonomous and controlled motivation (high quantity); (2) low scores on both autonomous and controlled motivation (low quantity); (3) high scores on autonomous motivation and low scores on controlled motivation (high quality); and (4) high scores on controlled motivation and low scores on autonomous motivation (low quality). These motivational profiles were differently associated with student outcomes. Motivational profiles containing high levels of autonomous motivation were associated with positive student outcomes such as higher persistence, lower test anxiety and higher academic

functioning (Hayenga & Corpus 2010; Ratelle et al., 2007; Vansteenkiste et al., 2009). Whereas motivational profiles containing high levels of controlled motivation were related to less desirable outcomes such as lack of personal autonomy (Henderlong et al., 2016), cheating and poor performance (Vansteenkiste at al., 2009). The distribution of these profiles differs across student populations and person-centred studies within the context of VET-students are rather limited. Vugteveen et al. (2016) found four subgroups among 514 VET-students, based only on the quantity of motivation, students' well-being and their intention to drop-out. Within their sample 54% of the students had substantially lower motivation and a higher risk of dropping out, of which 16% of the students belonged to a cluster with a critically low score on motivation and a high risk of dropping out. These findings may indicate that there could indeed be different subgroups of VET-students with different motivational profiles, yet this study was based solely on quantity of motivation, not on the quality, which is considered vital for understanding motivation according to SDT.

Although there is a definite need to gain more insight into the nature of VET-students' motivational profiles in general, we are in this dissertation also interested in how the quality of motivation for school in general transfers to students' engagement within lessons. This is important as positive student engagement is an important prerequisite for students' educational success and, as such, is related to better long-term vocational opportunities (Abbott-Chapman, Martin, Ollington, Venn, Dwyer, & Gall, 2014) and higher levels of deep-level learning, skill development and academic achievement (Barkoukiset et al., 2014; Reeve, 2012; Reeve & Tseng, 2011; Skinner, 2016; Skinner, Zimmer-Gembeck, & Connell, 1998). SDT research suggests a relation between students' motivation and their engagement in class (Niemiec & Ryan, 2009; Soenens, Sierens, Vansteenkiste, Dochy, & Goossens, 2010). Overall, autonomously motivated students would be expected to show positive active classroom engagement (Reeve, 2012). Jang, Reeve, Ryan and Kim (2009), found that intrinsically motivated students were more willing to engage in less interesting tasks and to value academic activities. A study by Walker, Greene and Mansell (2006) found that students' intrinsic motivation was positively related to students' meaningful cognitive engagement whereas students' controlled motivation predicted more shallow cognitive engagement. Students with controlled motivation would thus be expected to show more negative student engagement, which was found to seriously jeopardise academic success (Reeve, 2012).

Just as for motivation, not all states of engagement are beneficial for students' success at school. Therefore we distinguish between positive student engagement (e.g. paying attention, asking questions or taking initiative) and negative student engagement (e.g. complaining or disobeying rules). With regard to the assessment of positive or negative student engagement, there are many ways in which researchers operationalise student engagement. Yet, they all agree that student engagement is a multidimensional concept, which encompasses emotional, cognitive and behavioural aspects (Skinner, 2016; Wigfield et al., 2015). Students' affective reactions to classroom activities, such as the expression of positive affect, are referred to as *emotional engagement* (Van Uden et al., 2014). *Cognitively* engaged students understand the importance of their education (i.e. formulate their own learning goals; Van Uden et al., 2014). Students' *behavioural engagement* is reflected in observable behaviour directly related to their involvement in the learning process (Skinner 2016). Students' behavioural engagement can vary from more passive (e.g. paying attention in class) to more active student behaviour (e.g. asking questions, taking initiative; Nguyen et al., 2018).





**1.3.2 Research on teaching behaviour**

From the theoretical framework of SDT an abundance of empirical studies have derived concrete motivating teaching behaviours that seem to be beneficial in supporting students' needs (Haerens et al., 2013; Ntoumanis, 2005; Van den Berghe et al., 2013). Examples of a teacher providing autonomy support in lessons are: offering meaningful choices (Mouratidis & Michou, 2011), allowing students to take the initiative and to explore (Haerens et al., 2013) and providing meaningful rationales (Vansteenkiste et al., 2018). Teaching behaviours found to relate to providing structure within lessons are: clear communication of expectations and guidelines, the provision of desired help and guidance during activities (Haerens et al. 2013; Jang et al., 2010; Stroet, Opdenakker, & Minnaert, 2013) and constructive, informational feedback (Aelterman et al., 2019; Jang et al., 2010). Lastly, to offer relatedness support inside the classroom teachers can provide warmth and unconditional regard (Connell & Wellborn, 1991), show enthusiasm during lessons, care for students and pay attention to what students are saying (Haerens et al., 2013; Sparks, Dimmock, Lonsdale, & Jackson, 2016).

Controlling teaching behaviours can include pressuring students with sanctions, yelling, intimidating and offering contingent rewards, or inducing feelings of guilt, shame and anxiety (De Meyer et al., 2014). Chaotic teaching is characterised by the absence of clear goals and a lack of information on how to achieve goals if they are provided (Jang et al., 2010; Van den Berghe et al., 2013) and ambiguous feedback (Aelterman, 2014). Finally, cold teaching encompasses teaching behaviours such as being unfriendly or even rejecting or excluding students (Skinner & Belmont, 1993) and paying little attention to students in general (Van den Berghe et al., 2013).

Studies on the use of motivating teaching behaviours from an SDT-perspective predominantly focus on how motivating a classroom climate is or whether teachers show a motivating or demotivating teaching style (e.g., Aelterman, Vansteenkiste, Van den Berghe, De Meyer, & Haerens, 2014; Assor, Kaplan, & Roth, 2002; Jang et al., 2016; Niemiec & Ryan, 2009; Reeve, 2016; Reeve & Halusic, 2009), with providing autonomy-support having received the greatest attention. The studies that included different facets of teachers' motivating style suggest that of all motivating teaching behaviours, teachers use autonomy supportive behaviours the least often (Haerens et al., 2013; Van den Berghe et al., 2013). Moreover, this line of research has traditionally relied predominantly on questionnaire-based research and is built on the assumption that the use of motivating teaching behaviours is a more or less stable trait of teachers, not varying much within and across lessons. More recent research, however, begins to investigate the situational dependency of teachers' motivational teaching (e.g., Krijgsman et al., 2019) and employs more observational research (e.g., Haerens et al., 2013; Van den Berghe et al., 2013) to examine concrete behaviours rather than students' perceptions of their teachers motivating style.

This new line of research has shown that motivating teaching behaviour is also subject to moment-to-moment changes such as student behaviour and negative perceptions of students' abilities or motivation (Hornstra, Mansfield, Van der Veen, Peetsma, & Volman, 2015), or teachers' own need satisfaction (Matos, Reeve, Herrera, & Claux, 2018; Van den Berghe et al. 2016; Van den Berghe et al., 2013), heavy workloads and feelings of being pressured (Pelletier, Seguin-Levesque, & Legault, 2002; Pelletier & Sharp, 2009; Ryan & Deci, 2016). Observational research investigating teachers' use of motivating teaching behaviours within lessons showed that the prevalence of teaching behaviours does not only differ between lessons but also varies within lessons. Haerens et al. (2013) found that teachers provided more structure at the beginning of the lesson compared to the middle or end of the lesson. Next to that, Van den Berghe et al. (2016), in their study of the beginning of the lesson, found indications that teaching behaviours differ across five minute intervals. Hence, in addition to the perspective that teachers in general use either motivating or demotivating teaching, more fine-grained approaches suggest that teaching behaviours depend on the situation and therefore vary between and within lessons.

### 1.3.3 Research on Effects of Teaching Behaviour on Students' Motivation and Engagement

Within the context of VET, alternative programmes are designed to prevent at-risk students from dropping out. For example Fix (2018) examined four alternative programs that were inspired by the idea that sports can be used as a vehicle for social and emotional learning and re-engaging youth, using football stadium as a classroom. VET-Research on alternative programes like these showed positive associations between motivating teaching and students' motivation. Studies on alternative programmes in England report that good relationships with teachers contribute to students' success at school, whereas breakdowns in relationships with teachers jeopardise this success (Attwood et al., 2003; Wallace, 2014). Another such study in England shows that after a long history of negative relationships with teachers, teachers in alternative programmes were able to foster students' motivation for school again by building a trustful and respectful relationship with students (Nicholson & Putwain, 2018). In addition, a study in Switzerland indicates that in order for these alternative programmes to be successful, teachers unitedly need to put their emphasis on the personal development of their students (Brahm et al., 2013).

Additionally, research in the Netherlands shows that part of the success of alternative programmes in fostering students' motivation is teachers' use of humour and their ability to grant autonomy to their students (Fix, 2018). Another study reports that teachers are of vital importance in engaging students within lessons (Van Uden et al., 2014). In Van Uden et al.'s study, teachers were asked to develop activities to enhance students' engagement. Most teachers focussed their activities on building positive relationships with students, indicating the importance of relatedness support. Furthermore, teachers reported that consistency towards students and providing structure were beneficial in engaging students in their lessons. In addition, studies from the SDT perspective which did not involve high-risk student samples and that predominantly used questionnaires (for e.g. Haerens, Aelterman, Vansteenkiste, Soenens, & Van Petegem, 2015; Molinari & Mameli, 2017), demonstrated a positive relationship between perceived motivating teaching behaviour and students' motivation. This would mean that using more motivating teaching could also foster the motivation of students not yet at risk, increasing their chances of being successful in VET.

Overall, in numerous studies, motivating teaching has been found to foster students' autonomous motivation for school in general (Jang et al. 2016; Molinari & Mameli, 2017; Quin, 2017; Reeve & Jang, 2006; Reeve et al., 2004; Sierens, 2010; Vansteenkiste et al., 2012). Additionally, other positive student outcomes were found to be related to the use of motivating teaching, such as students' well-being, persistence in school and self-regulated learning strategies (Hardre & Reeve, 2003; Ntoumanis, 2005; Reeve & Jang, 2006; Reeve et al., 2004; Sierens, 2010; Standage, Duda, & Ntoumanis, 2003; Vansteenkiste, Lens, & Deci, 2006; Vansteenkiste et al., 2012). On the other hand, demotivating teaching has been shown to result in controlled motivation (De Meyer et al., 2014; Hearens et al. 2015; Van den Berghe et al., 2013, 2016). In addition, demotivating teaching was found to be related to problem behaviour, negative affect, inadequate coping and poor performance (Bartholomew, Ntoumanis, Ryan, Bosch, & Thogersen-Ntoumani, 2011; Ryan & Deci, 2000a).

With regard to the relationship between motivating teaching and student engagement in lessons, there are only few observational studies that provide support for a positive relationship between motivating teaching and students' engagement (Reeve et al., 2004; Van den Berghe, Tallir, Cardon, Aelterman, & Haerens, 2015). Within SDT research there are now more observational studies complementing prior questionnaire-based research, providing more insights into teachers' actual use of motivating teaching behaviours. Reeve et al. (2004) observed that the more autonomy support teachers offered during a lesson the more engaged students were. Furthermore, research by Van den Berghe et al. (2015) showed that when teachers showed more need support in the first five minutes of the lesson, their students were more engaged during the third five-minute interval of the lesson.

Although research studying the 'dark side' of SDT (i.e. demotivating teaching) is underrepresented within the SDT research tradition, Haerens et al. (2015) found that demotivating teaching was related to students' controlled motivation and amotivation and defiance. Furthermore, when teachers thwart students' basic psychological needs this has been shown to result in negative affect, inadequate coping and poor performance (Bartelomew et al., 2011; Ryan & Deci, 2000a). In addition, observational research showed that demotivating teaching behaviour, although low in occurrence, had a substantial negative impact on student engagement and should therefore be avoided (De Meyer et al., 2014; Van den Berghe et al., 2013).

A summary of the research with regard to the appliance of SDT in classrooms is depicted in Table 1.1. Hereby, the teaching context is not considered to be only need supportive or need thwarting as suggested by research at the trait level, but is considered on a more micro level to change from situation to situation within lessons.

## 1.4 | Reflections on current research

The available evidence outside the context of VET-education shows quite consistently that teachers have an important role in fostering students' motivation and engagement. Currently, it is not yet clear how VET-teachers apply the identified motivating and demotivating teaching behaviours within their lessons and how this relates to students' motivation and engagement. Based on these gaps in the current literature, we formulated our research aims.

### 1.4.1 Motivational challenges of VET-students

So far, besides the social opinion and debate telling us that VET-students are not motivated for school there is little scientific research that actually demonstrates in a theoretically and empirically underpinned way that there are motivational challenges in this specific student population (Van der Veen et al., 2013). Thus, before it is even possible to explore ways to support VET-students' autonomous motivation it is necessary to first investigate what their quality of motivation actually is. Up to date studies using an SDT perspective have shown the importance of studying both the quality and quantity of motivation, thus describing students' motivational profiles. Yet, in SDT studies on motivational profiles the VET student population is underrepresented. Therefore, this approach first needs to be validated within the VET-context to be able to compare their motivation profiles (based on the quality of their motivation) with other student populations.

Additionally, we wanted to know how students' quality of motivation expresses itself within lessons through students' engagement. Yet studies that provide rich observational data to capture the nature of VET-students' engagement in lessons are scarce. Recent research outside the VET-context has shown that students' engagement can vary significantly from one instructional episode to the next (Shernoff et al., 2016; Van den Berghe et al., 2016; Wigfield et al., 2015). In addition, students' engagement can differ from one situation to the next depending on contextual factors such as the students' learning environment and the support they receive from their teachers (see also Hornstra, Stroet, van Eijden, Goudsblom, & Roskam, 2018). Observing VET-students' engagement in lessons would provide valuable insights into the manifestation of their motivation in class. Because teachers cannot know what is going on in the heads of their students, they also have to go with what they observe. It is therefore likely that they adjust their teaching behaviour according to what they see, i.e., students' engagement in class. In addition, observing students' engagement from one moment to the next will further contribute to research on the situational dependency of students' engagement.

### 1.4.2 Using aggregated levels of student and teaching behaviours

Despite the distinct differences in indicators of student engagement, most observational studies used aggregated measures of students' emotional, passive and active behavioural engagement (Van den Berghe et al., 2016). However, in the SDT research tradition on student engagement, a recent shift can be observed in its conceptualisation. Initially, SDT predominantly focused on the most common aspects of student engagement, namely, passive compliant behaviours in which students merely react to the behaviours of their teachers (Lawson & Lawson, 2013). More recent studies, however,





**Table 1.1** Schematic summary of SDT applied to the relationship between teaching and student motivation (based on Aelterman et al., 2013, 2014; Ryan & Deci, 2000a,b).

| Students' Basic Needs | Teaching Context | Teaching | Teaching behaviours | Student motivation | Type of motivation | Engagement in lessons |
|---|---|---|---|---|---|---|
| **Autonomy** | Need Supportive (+) | Autonomy Support | • Meaningful choices<br>• Allow initiative and exploration<br>• Meaningful rationales | Autonomous motivation | Intrinsic motivation | Enthusiasm, interest, asking questions, actively contributing to activities, trying hard, persisting or showing initiative |
| **Competence** | | Structure | • Clear expectations and guidelines<br>• Help and guidance<br>• Constructive feedback | | Integrated regulation | |
| **Relatedness** | | Relatedness support | • Warmth and unconditional regard<br>• Enthusiasm<br>• Empathy | | Identified regulation | |
| | Need Thwarting (-) | Control | • Intimidating<br>• Offering contingent rewards<br>• Inducing feelings of guilt | Controlled Motivation | Introjected regulation | Easily give up when challenged, passive, bored, complaining about assignments that are not graded, disobeying the rules, lack of engagement |
| | | Chaos | • Lack of information<br>• Ambiguous feedback<br>• Absence of goals | | External regulation | |
| | | Cold | • Unfriendly<br>• Lack of interest<br>• Indifference | | Amotivation | |

highlight the importance of a more action-oriented conceptualisation of engagement focused on students' pro-active engagement in class, that is, actions of students which are not triggered by their teachers (Appleton, Christenson, & Furlong, 2008). In line with the ambition of VET concerning VET-students' development, pro-active engagement focuses on students taking charge of their own learning process. Yet by using aggregated scales, lumping different indicators of student engagement together, these qualitative differences in student engagement (e.g. active versus passive) are overlooked.

Similarly, (de)motivating teaching behaviours are also mostly investigated using aggregated scales across (segments of) lessons. Hereby, research has focussed on the relations between only one or a few dimensions of (de)motivating teaching behaviours and a mean level of student engagement. The use of aggregated scales in previous observational research does not reveal in detail how motivating teaching behaviours vary within lessons, which behaviours are hardly used and how these behaviours are related to different indicators of student engagement. Thus, observing and describing the individual (de)motivating teaching behaviours (on all dimensions of SDT) and different aspects of student engagement would provide a more in-depth description of the complexity around their association in lessons. Using a more fine-grained research approach could be a very promising way to provide a more detailed description of the use of these concrete (de)motivating teaching behaviours and their specific associations with different aspects of student engagement.

### 1.4.3 Student-teacher interaction

Up-to-date, teaching and student behaviour have been investigated predominantly as though teachers and students act in isolation. Yet, within lessons teachers are in continuous interaction with their students. Consequently, student and teacher behaviour will be (at least partly) a reaction to each other's behaviour in the classroom and they will – for better or worse – adapt their own behaviour to that of the other. Additionally, both (de)motivating teaching behaviour (Hornstra et al., 2015; Matos et al., (2018); Pelletier et al., 2002) as well as student behaviours related to their engagement (Hornstra et al., 2018; Shernoff et al., 2016) have been found to depend on situational factors to a certain extent. Therefore, investigating the relation between both concepts from moment-to-moment may reveal important patterns related to motivating students within the everyday practice of teaching. Within lessons, it could be that teachers only use a couple of motivating teaching behaviours because they usually result in positive student engagement. In addition, teachers may not apply motivating teaching behaviour that in their experience seems to result in negative student behaviour, or behaviours that they are not aware of that could be promising, or they may dislike certain motivating teaching behaviours. Therefore, it seems important to unravel the dynamics of specific micro interactions associated with (de)motivating teaching related to student engagement.

### 1.4.4 Aims of this dissertation

The present dissertation has three aims: (1) investigating VET-students' motivation for school and their engagement in lessons. To reach this aim, we will investigate VET-students' motivational profiles and observe their actual engagement in lessons. The second aim (2) is to examine teachers' use of (de)motivating teaching behaviours in lessons to provide a detailed understanding of the specific behaviours teachers use in lessons. Lastly, we want to (3) explore how (de)motivating teaching behaviours are related to motivation and engagement in lessons. This will be investigated by observing the differences in lessons with either low or high levels of student engagement and exploring student-teacher interactions using a micro analytical approach.

From a scientific perspective, although the research questions originated from the practices of the Graafschap College (VET), we aim with this this dissertation to offer scientific contributions that go beyond this understudied population. With the use of more fine-grained research methods such as a person-centred approach, we hope to not only validate SDT principles, specifically regarding VET-students' motivation, but also to shed more light on the dynamics of motivating teaching and students' engagement in everyday classroom interactions. By moving beyond trait-based summary accounts we hope to complement emerging observational SDT research by investigating fluctuations of student and teaching behaviours within and across lessons, and to study their situational dependency. Furthermore, the innovative methodological approaches could move SDT as well as other educational research forward by adopting these methods to gather more detailed insight into the everyday practice of lessons, as practice could be unrulier than theory suggests.

With regards to the practice of education this dissertation aims to offer specific recommendations on effective teaching behaviours to support students' motivation and engagement by identifying which motivating teaching behaviours can be used to foster student engagement and how they can be applied in lessons. Fostering students' motivation could ultimately impact students' motivation for school leading to less drop out and higher persistence. These recommendations can be applied in many different areas in education and educational policy: student counselling, assessment, curriculum design and creating positive classroom climates for students.

## 1.5 | Layout of the thesis

**Chapter 2** investigates the basic assumption of this dissertation, which is that VET-students experience challenges with their motivation. A person-centred approach was applied to explore the associations between student motivation and how they experienced their educational context. The motivation of VET-students was investigated with profile analyses on student questionnaires. This person-centred approach could reveal if VET-students indeed show a challenging quality of motivation for school. By identifying different groups of students with distinct motivational profiles it will become apparent if there are indeed groups of students with motivational challenges and if their challenges have any relationship with prior negative school experiences or the current support of their VET-teachers.

**Chapter 3** is focused on the relationship between specific motivating teaching behaviours in relation to indicators of student engagement in contrasting lessons with either high or low student engagement. This study explores different indicators of VET-students' engagement and detects variations of their engagement within and across

lessons. In addition, this study allows for differentiation between different aspects of student engagement and examines if all motivating teaching behaviours are equally beneficial for every indicator of student engagement or just beneficial for certain indicators. To this end, we coded 145 videotaped lessons with an existing observational instrument based on interval rating. This approach could complement prior observational research with a more detailed overview of the way teachers use motivating teaching behaviours in lessons in which students are highly engaged compared to lessons with low levels of student engagement.

**Chapter 4** is focused on studying student-teacher-interactions on a micro-level. We aim to relate teachers' concrete (de)motivating teaching behaviours to different visible indicators of students' engagement in lessons to be able to investigate the back-and-forth behavioural patterns between teachers and students. A novel micro-analytic approach in studying the dynamics of teacher and student behaviour is applied to study the situational dependency of motivating teaching and student engagement in more detail. For this purpose, an observational instrument based on event-coding was developed to identify patterns of motivating and demotivating teaching behaviours and behaviours related to students' positive and negative engagement. Exploring the temporal dependency of students' and teachers' behaviours could offer new insights into the dynamics of motivating teaching and students' engagement in everyday classroom interactions. Besides its contribution to prior observational research this could also lead to more specific recommendations for teachers to further foster student engagement

In the final Chapter, **Chapter 5**, the findings of the individual studies are summarised to present an integrated discussion with regard to the overall goals of this dissertation. We reflect on ways for teachers to foster students' motivation, outlining the theoretical implications of our findings. Furthermore, the practical implications of the findings for students, teachers, curricula, schools and policy are addressed.





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# CHAPTER 2

## Identifying Motivational Profiles among VET-students: Differences in Self-Efficacy, Test Anxiety and Perceived Motivating Teaching

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# Abstract

There are indicators that a substantial number of students in vocational education and training (VET) experience problems successfully building their careers. This is often attributed to VET-students' motivation. The present study provides insight into VET-students' motivational profiles based on self-determination theory. Additionally, differences between those motivational profiles in terms of self-efficacy, test anxiety and perception of motivating teaching were investigated. The study involved 195 VET-students, from one VET college in the Netherlands. Using latent profile analyses four motivational profiles were identified, that differed with respect to quality and quantity of motivation. Profiles with higher quality (25%) and higher quantity (27%) of motivation were related to higher levels of self-efficacy and perceived motivating teaching compared to profiles with low quantity (7%) or low quality (41%) of motivation. Furthermore, students in the profile with high quality motivation reported the lowest levels of test anxiety. Furthermore, our findings suggest there is indeed a relatively large group of VET-students (48%) who experiences motivational problems. Practical implications and directions for future research are discussed.






## 2.1 | Introduction

In the Netherlands almost half a million students engages in vocational education and training (VET). For these students VET serves as a stepping stone towards future labour market careers or higher education (de Bruijn, Billett, and Onstenk 2017). Within different countries students seem to struggle making a smooth transition to VET (Billett et al 2010; Brahm, Eules, and Steingruber 2013; Vugteveen et al. 2016; White and Laczik 2016). In addition, studies worldwide show that several VET-students experience problems to persevere which could severely impact their opportunities in successfully building their careers. Similar findings have been reported for the Netherlands, with the highest share of dropout (80%) being reported within senior secondary vocational education (VET), (Bussemaker 2016). About half of these students quit school during their first year in VET, after finishing preparatory secondary vocational education (Elffers 2011). Low intrinsic motivation of VET-students is often mentioned as a major cause of these problems (Vugteveen et al. 2016). Yet surprisingly little research has been conducted into students' actual motivation for VET and how this is related to their experiences of the educational context (van der Veen et al. 2014). As students have very heterogeneous reasons for studying in VET there maybe subgroups of students that struggle more with their motivation to persist in VET than others.

For the majority of adolescents, studying is probably not at the top of their priority list. Most adolescents are more strongly focused on activities outside the learning context (e.g. peers, romantic relationships), and this is not different among VET-students (Allen and Loeb 2015; Brown 1999). The question then is why VET-students in particular may be less interested in their study? This may be related to the specific problems VET-students experience in their educational context. First, it is more likely that VET-students lost confidence in their capabilities (Fuller and Macfadyen 2012; Glaesser 2010; Groeneveld and van Steensel 2009), because throughout their school career they typically belonged to the lower achieving group (Peetsma and van der Veen 2015). This could ultimately result in lower self-efficacy (Fuller and Macfadyen 2012; Glaesser 2010; Groeneveld and van Steensel 2009) and higher anxiety about testing (Rozendaal, Minnaert, and Boekaerts 2003). Besides experiences in their prior school careers, it seems important to investigate how VET-students experience their current teaching context. Prior studies indicate that students' perceptions of their teachers are related to students' motivation and as such an important aspect within students' educational context (Vallerand, Fortier, and Guay 1997; Maulana, Opdenakker, and Bosker 2016; Stroet et al. 2015;Vansteenkiste et al. 2009).

The aim of the current study was to examine if there are distinct groups of VET-students with specific motivational profiles. Additionally, we examined if these groups differed in their levels of self-efficacy, test anxiety and how they perceived their teachers' motivating teaching as part of their educational context. This knowledge could indicate if there are specific groups of students that may need additional support and may be used to advise VET colleges how to (better) foster students' motivation.

### 2.1.1 Motivation and Motivational Profiles

Motivation is certainly a multi-determined construct (Cook and Artino 2016). In order to support VET schools in their efforts to foster their students' motivation, a focus on those

aspects of motivation that are open to direct influence of schools and teachers is important. Self-determination theory (SDT) provides a valuable and well-validated framework for investigating students' motivation. SDT distinguishes six types of motivational regulations, ranging from amotivation to self-determined forms of motivation (Ryan and Deci 2000 2017). Amotivation is the least self-determined form of motivation, and is basically characterised by a complete lack of learning motivation (Prenzel, Kramer and, Drechsel 2002). Amotivated students refrain from studying for reasons ranging from indifference to apathy. External regulation refers to behaviours that are initiated and controlled by external contingencies of reward and punishment. A student that studies because he/she is obligated by government constitutes an example of external regulation. When a student has introjected reasons for studying, he/she feels internally pressured to engage in learning activities (Vansteenkiste et al. 2009). For example, a student may feel pressured to put effort into a task to obtain feelings of pride and self-aggrandisement. We speak about identified regulation when students find personal meaning and value in studying (Vansteenkiste et al. 2009). A student who attends the theoretical classes because he/she really wants to become a nurse illustrates identified regulation. Integrated regulation occurs when the activity is congruent with other more deeply anchored values, commitments and interests of a student (Ratelle et al. 2007). These students' reasons for studying are inherent to their identity as students: it is part of their nature. Finally, the last type of regulation is intrinsic motivation, which entails studying for reasons that are inherent to the activity such as satisfaction and enjoyment (Ratelle et al. 2007). An intrinsically motivated student goes to school out of sheer enjoyment and interest. In SDT, external and introjected regulation are considered two types of controlled motivation because they are both related to feelings of pressure to engage in the activity, while identified regulation, integrated regulation and intrinsic motivation are forms of autonomous motivation, because students willingly put effort into the task.

Prior research has shown that controlled motivation predicts negative outcomes such as school dropout (Vallerand, Fortier, and Guay 1997), low school achievement (Barkoukis et al. 2014; Soenens and Vansteenkiste 2005), high test anxiety and more procrastination (Vansteenkiste et al. 2009). In contrast, a variety of positive outcomes have been associated with autonomous motivation (for a review, see Stroet, Opdenakker and Minnaert 2013), including, but not limited to, low dropout rates (Hardre and Reeve 2003; Vallerand, Fortier and Guay 1997), increased persistence (Vallerand and Bissonnette 1992) and higher academic performance (Barkoukis et al. 2014). In general, it is well established that controlled motivation is related to poorer outcomes, whereas autonomous motivation is related to more optimal outcomes. Naturally, there will be inter-individual variability between VET-students' motivation for studying; some students study predominantly because they want to pursue a particular career (autonomous), others because they feel obliged (controlled). Moreover, students' motivation to study can consist of various gradations on the motivational spectrum. There may be subgroups of students that combine both autonomous and controlled reasons to study, while others may study predominantly out of autonomous or controlled reasons. As such there may be different combinations of motivational regulations resulting in personal profiles, which can be identified using a person-centred approach. In earlier work, using a sample of secondary school students and a sample of college students, Vansteenkiste et al. (2009) detected four different motivational profiles: (1) overall high scores on autonomous and controlled motivation (high quantity); (2) low scores on both autonomous and controlled motivation (low quantity); (3) high scores on autonomous motivation and low scores on controlled motivation (high quality); and (4) high scores on controlled motivation and low scores on autonomous motivation (low quality). Similar clusters were found in other studies among secondary school students (Henderlong et al. 2016; Ratelle et al. 2007), middle school students (Hayenga and Corpus 2010) and college students (Ratelle et al. 2007).

Following this type of person-centred approach, studies have demonstrated that students within the high quality profile show the most favourable outcomes, such as higher persistence, lower test anxiety and higher academic functioning (Hayenga and Corpus 2010; Ratelle et al. 2007; Vansteenkiste at al. 2009). In contrast, students within the low quality group showed a less desirable pattern of outcomes, including work avoidance, concerns about others' approval, lack of personal autonomy (Henderlong et al. 2016), cheating and poor performance (Vansteenkiste at al. 2009). Outcomes for students in the high and low quantity profiles usually fall between the high quality and low quality profiles. Students in the high quantity profile typically show less optimal outcomes than students in the high quality profile, even though they have high levels of autonomous motivation (Hayenga and Corpus 2010; Henderlong et al. 2016; Ratelle et al. 2007; Vansteenkiste et al. 2009), whereas students in the low quantity group sometimes outperform the low quality students (Vansteenkiste et al. 2009). Wormington, Corpus, and Anderson (2012) found a slightly different pattern in students' outcomes over the different motivational profiles. They found that students within the high quality and high quantity profiles seemed equally favourable. Furthermore, within their study, the low quality profile outperformed the low quantity profile. Overall, these studies demonstrate that the high-quality profile displays the most adaptive pattern of student outcomes, whereas the low quality profile shows the least adaptive pattern.

### 2.1.2 Self-Efficacy and Test Anxiety

Throughout their school careers, VET-students in the Netherlands typically belong to the lower achieving group and usually attend the lower tracks of secondary school (Peetsma and van der Veen 2015). Related to students' motivation, research has shown that VET-students often perceive themselves as academically inadequate (Fuller and Macfadyen 2012), have a lower sense of self-efficacy (Fuller and Macfadyen 2012; Groeneveld and van Steensel 2009) and report higher levels of test anxiety (Rozendaal, Minnaert and Boekaerts 2003). This indicates that students' expectancy about whether they are able to do well at school (i.e. self-efficacy) and their fear of failure with regard to test performance (i.e. test anxiety) are closely associated with their motivation to study (Pintrich and de Groot 1990). Therefore, to provide schools and teachers with a genuine insight into the motivation of this target group, it is necessary to investigate whether students within different motivational profiles might also show related differences with regard to self-efficacy and test anxiety.

### 2.1.3 Motivating Teaching

Teachers interact with students on a daily basis and as such have a central role in fostering students' motivation (Maulana, Opdenakker, and Bosker 2016; Stroet, Opdenakker, and Minnaert 2015). Specifically, SDT poses that students' autonomous motivation will be enhanced when their basic psychological needs for autonomy (i.e. experiencing a

sense of volition and psychological freedom), competence (i.e. feeling effective) and relatedness (i.e. experiencing a sense of closeness and friendship) are fulfilled (Ryan and Deci 2000). Applying this to the context of teaching indicates that motivational teaching consists of offering autonomy support (autonomy), providing structure (competence) and being relatedness supportive (relatedness).

Students perceive their teacher as autonomy-supportive when they are provided with a desirable number of meaningful choices (Mouratidis and Michou 2011) and are allowed to take the initiative (Jang, Reeve, and Halusic 2016) and to explore assignments for themselves before support is offered (Haerens et al. 2013). Prior studies show that students' perceptions of autonomy support are related to higher autonomous motivation (Soenens and Vansteenkiste 2005) and less test anxiety (Sierens 2010). According to SDT, the provision of structure is assumed to nurture students' need for competence (Ryan and Deci 2017). Teachers who provide structure, communicate clear expectations and guidelines to students, give meaningful instructions, frame upcoming lessons well, provide desired help and guidance during activities (Haerens et al. 2013; Jang, Reeve, and Deci 2010; Stroet, Opdenakker, and Minnaert 2013), are encouraging and provide positive informational feedback during and after task completion (Stroet, Opdenakker and Minnaert 2013). In an extensive literature review, Stroet, Opdenakker, and Minnaert (2013) demonstrated that structure is positively associated with autonomous motivation. Finally, teachers' involvement is assumed to foster students' need for relatedness (Ryan and Deci 2017). Involved teachers demonstrate sincere concern and provide warmth and unconditional regard (Connell and Wellborn 1991). Stroet, Opdenakker, and Minnaert's (2013) review demonstrates a consistent positive association between teachers' involvement and students' autonomous motivation.

In sum, research indicates that students who perceive their teachers as motivating will more likely study because of inherent enjoyment (i.e. intrinsic motivation) or personal value (i.e. identified regulation) rather than because they feel either externally or internally pressured to do so (i.e. controlled motivation) (Haerens et al. 2015). This suggests that students in different motivational profiles could also display differences in their perceptions of motivating teaching; autonomy support, structure and involvement.

**2.1.4 The Present Study**

The overall aim of the present study was to gain more insight in VET-students' motivational profiles and how these profiles are related to students' experiences of their educational context, thereby addressing two research questions.

1. Which motivational profiles best describe VET-students' motivation?
While most of the SDT studies on motivational profiles make use of composite scores for two scales, controlled and autonomous motivation, analyses based on the individual regulations might reveal differences in profiles and related outcomes. Howard et al. (2016) found slightly different profiles in a sample of working adults: amotivated, balanced, autonomously regulated and highly motivated. From these profiles, participants in the highly motivated and autonomously regulated profiles reported superior work performance and higher levels of wellbeing, while the amotivated profile fared the worst (Howard et al. 2016). Considering the whole range of behavioural regulations instead of using two composite scales could provide important additional information, therefore in this study we use the individual regulations to investigate students' motivational profiles.

Consistent with prior research, we expected to identify at least four motivational profiles similar to the high quality, low quality, high quantity and the low quantity profile as found by Vansteenkiste et al. (2009). As the population of VET-students is often described as having poor intrinsic motivation, we expected to find a relatively large number of students in a profile with predominantly high levels of introjected and external regulation.

2. Do students in different motivational profiles differ in their experience of their educational context (self-efficacy, test anxiety and motivating teaching)?
Based on most prior research, we expected a relationship between belonging to the high quality profile and more positive experiences of the educational context. In contrast, we expected belonging in the low quality profile to be related to more negative experiences of their educational context. The high quantity profile and low quantity profiles were expected to be in between, with somewhat more positive associations for the high quantity profile and more negative association for the low quantity profile. (Hayenga and Corpus 2010; Henderlong et al. 2016; Ratelle et al. 2007; Vansteenkiste et al. 2009).

## 2.2 | Method

**2.2.1 Participants**

In the Netherlands, the largest group of students starts vocational education around the age of 16 after finishing lower secondary vocational education. VET encompasses about 42% of the total student population in Dutch post-secondary education (Dutch Ministry of Education Culture and Science 2013), which is above the European average (CEDEFOP 2017). The present study was conducted in one VET college in the eastern part of the Netherlands. This VET college took part in this study because its board looked for policy input to foster students' motivation. The VET college is a midsized institute that educates almost 9000 students and offers about 40 different tracks.

We took a convenience sample of students who were enrolled in the following tracks: Basic Care and Welfare (level 2)[1] and Social Cultural Work and Pedagogical Work (level 4). In total, 195 students participated, divided over 13 classes, and attached to four different teams of teachers (n = 53). Of the participating students, 76.4% (n = 149) were female; the age of the students ranged from 15 to 27, with an average of 17.8 years (SD = 1.78). When asked about their cultural ethnic background, 83.2% of the students reported that their father was Dutch and 85.2% of the mothers were Dutch. Parental country of birth, other than the Netherlands, varied from European countries (3.5% fathers, 2% mothers) to Morocco and Angola (1 per cent fathers, 1% mothers), Asia, mostly Middle Eastern countries (8.6% fathers, 8.8% mothers), Suriname and the Dutch Antilles (3.1% fathers, 1% mothers).

[1] Vocational education in the Netherlands is divided into four levels. For example, in a specific track, these levels correspond to:
1. Assistant employee (care aid), one year track
2. Employee (supporting in care and welfare), one to two year tracks
3. Independent employee (practical nurse), two to three year track
4. Specialised professional (nurse), three to four year tracks

### 2.2.2 Procedure

The study was conducted in the second part of the first year, considering it to be a 'sensitive period' in terms of dropout (Elffers 2011). Additionally, students know their teachers by then and have a good sense of their teachers' motivating teaching. Students in the 13 different classes received an invitation to participate in the study and were asked to inform us if they did not wish to participate (passive consent). When students were under the age of 18, parents received the same information. No students or parents withheld their consent for participation. However, not all students were present in the classroom when they were scheduled to fill in the questionnaires. The teams that worked with fixed classes (combining 178 out of the 195 participants) had a response rate of 76.07%. One team did not work with fixed classes, hence response rates could not be calculated. Seventeen out of the 195 participants did not indicate their class. Six participants choose not to reveal their age, and three did not indicate their parental birth country. The questionnaires were designed such that participants could only proceed to the next question after they had provided an answer, which prevented missing data.

Students were asked to fill out an online questionnaire with the survey tool in Google Drive, which took about 15 minutes to complete. Teachers were instructed to refrain from looking at the screens and only to respond to students if they had difficulties understanding the questions. Students were assured that their data would be handled anonymously.[2]

### 2.2.3 Measures

*Motivation.* Students' motivation was measured with the Academic Self-Regulation Scale (SQR-A) (Ryan and Connell 1989) adjusted for higher education and translated into Dutch by Vansteenkiste et al. (2009). Students responded to statements about their reasons for studying on a scale from 1 (not important at all) to 5 (very important). The SQR-A consists of four subscales with four items each: external regulation (e.g. "I study because I'm supposed to do so"; $\alpha = 0.76$), introjected regulation (e.g. "I study because I would feel guilty if I did not do so"; $\alpha = 0.84$), identified regulation (e.g. "I study because I want to learn new things"; $\alpha = 0.87$) and intrinsic motivation (e.g. "I study because it's fun"; $\alpha = 0.87$). Each scale was created by averaging the scores on the items, which showed good internal consistency.

Although SDT distinguishes six types of regulations, we focused on just four of them, excluding amotivation and integrated regulation. Amotivation was omitted because we were interested in students' intentions for going to school and amotivation is characterised by a general lack of intention and motivation. Integrated regulation was excluded because it requires a fully developed identity, which is unlikely given the fact that the majority of the participants (76%) are adolescents and thus in the midst of their identity formation (Ryan and Connell 1989).

*Self-efficacy and test anxiety.* Self-efficacy and test anxiety were measured with the Motivated Strategies for Learning Questionnaire (Pintrich and de Groot 1990). Students were asked to answer questions about how they approach their study on a scale from 1 (completely not true for me) to 7 (completely true for me). The subscale self-efficacy for learning and performance consists of eight items (e.g. "I'm certain I can master the skills being taught in this track"; $\alpha = 0.90$). The subscale test anxiety includes five items and refers to worries, negative thoughts and affective, physiological arousal aspects of anxiety (e.g. "When I take tests, I think of the consequences of failing"; $\alpha = 0.83$).

*Perceived motivating teaching.* Students' perceptions of their teachers' motivating teaching were measured with the Dutch shortened version of the Teacher as Social Context Questionnaire (TASCQ; Belmont et al. 1988). Students in VET schools are taught and thus motivated by a team of different teachers. Therefore this study explores how students perceive the motivating teaching of their teacher team in general.

Ideally students would have filled out the questionnaire for each individual teacher in their team (5-10 in each team), yet this would have been too demanding for students. In other studies, often one individual teacher (like the teacher for dutch or math) is selected, yet we did not prefer to do so given that we were interested in students' general perceptions of their experiences at school.The following subscales, each consisting of eight items, were used: autonomy support (e.g. "My teachers give me a lot of choices about how I do my schoolwork"; $\alpha = 0.73$), structure (e.g. "My teachers show me how to solve problems for myself"; $\alpha = 0.67$) and involvement (e.g. "My teachers really care about me"; $\alpha = 0.79$). All items were answered on a five-point scale ranging from 1 (completely disagree) to 5 (completely agree). To calculate the scale scores, all ratings of the negatively formulated items were reverse coded and the scores on the items of each scale were averaged. Because of the high intercorrelations between the scales ($0.62 > r < 0.74$; see Table 1), we created a composite perceived motivating teaching scale ($\alpha = 0.83$) by averaging the scores for perceived autonomy support, structure and involvement.

### 2.2.4 Analyses

To answer the first research question, we used latent profile analysis to identify VET-students' motivational profiles. Compared to other cluster methods, latent profile analysis offers more indicators to evaluate how many groups best describe the data (Howard et al. 2016). The analysis was performed in Mplus using the scores on external regulation, introjected regulation, identified regulation and intrinsic motivation. Bayesian information criterion (BIC), adjusted Bayesian information criterion (ABIC) and Akaike information criterion (AIC) were used to determine the optimal number of profiles. According to Nylund, Asparouhov, and Muthen (2007), the lower these criteria are, the better the model fit is. In addition, entropy gives an indication of the precision with which cases are classified into the profile, with values closer to 1 indicating a better classification (Celeux and Soromenho 1996). Furthermore, we analysed the *p*-values of the bootstrap likelihood ratio test (BLRT), as this has been proved more reliable (Nylund, Asparouhov, and Muthen 2007), pointing to a better fit of the model compared to a model with one group fewer. The Vuong-Lo-Mendell-Rubin likelihood ratio test (VLMR) and the Lo-Mendell-Rubin likelihood ratio test (adj. LMR) have the same purpose as the BLRT and are also reported. Models of one to eight profiles were estimated using the maximum likelihood ratio (MLR).
To answer the second research question, profile membership was used in a multivariate analysis of variance (MANOVA). Through post hoc tests we examined differences between the motivational profiles (independent variable) with regard to perceived motivating teaching, self-efficacy and test anxiety (dependent variables).

[2] This study was approved by the ethical committee of Radboud University (ECSW2015-1901-285).

## 2.3 | Results

**2.3.1 Descriptive Statistics**

Means and standard deviations of the study variables are presented in Table 2.1. Inspection of the means shows that external, introjected and intrinsic motivation are just above the mid-range of the scale, while identified regulation is more towards the high range of the scale. The means for the scales of test anxiety and self-efficacy showed scores in the mid-range of the scale. Moreover, means on the dimensions of motivating teaching seem to indicate that, overall, students rated motivating teaching in the mid to high range of the scales.

**Table 2.1** Means and Standard Deviations of the Study Variables as a Function of Level, Gender and Track.

| | | Motivation | | | | Educational Context | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | *N* | External Regulation | Introjected Regulation | Identified Regulation | Intrinsic Motivation | Test Anxiety | Self-Efficacy | Autonomy Support | Structure | Involvement |
| *Level of Education* | | | | | | | | | | |
| Level 2 | 109 | 2.60 (.90) | 2.85 (1.11) | 3.83 (.83) | 2.83 (.95) | 3.85 (1.46) | 4.91 (.91) | 3.38 (.67) | 3.36 (.56) | 3.50 (.68) |
| Level 4 | 86 | 2.49 (.87) | 2.65 (1.05) | 3.94 (.95) | 3.01 (.95) | 3.31 (1.28) | 5.11 (.95) | 3.50 (.59) | 3.36 (.59) | 3.42 (.50) |
| *Gender* | | | | | | | | | | |
| Male | 46 | 2.61 (.89) | 2.94 (1.08) | 3.90 (.94) | 3.15 (.76) | 3.57 (1.32) | 5.06 (.98) | 3.46 (.55) | 3.40 (.58) | 3.52 (.70) |
| Female | 149 | 2.53 (.88) | 2.70 (1.10) | 3.81 (.87) | 2.83 (.99) | 3.62 (1.43) | 4.98 (.92) | 3.43 (.66) | 3.35 (.56) | 3.44 (.60) |
| *Track* | | | | | | | | | | |
| PW[a] | 52 | 2.55 (.85) | 2.52 (1.01) | 3.94 (1.04) | 2.88 (1.04) | 3.21 (1.14) | 5.09 (.88) | 3.57 (.54) | 3.38 (.51) | 3.35 (.50) |
| BCW[b] | 109 | 2.60 (.90) | 2.85 (1.11) | 3.83 (.83) | 2.83 (.95) | 3.86 (1.45) | 4.90 (.90) | 3.38 (.67) | 3.36 (.56) | 3.50 (.68) |
| SW[c] | 35 | 2.40 (.86) | 2.82 (1.10) | 3.96 (.81) | 3.17 (.78) | 3.42 (1.46) | 5.18 (1.08) | 3.45 (.69) | 3.37 (.70) | 3.53 (.60) |
| Total | 195 | 2.55 (.88) | 2.76 (1.09) | 3.88 (.88) | 2.91 (.95) | 3.61 (1.40) | 5.00 (.93) | 3.44 (.63) | 3.36 (.57) | 3.47 (.63) |

*Note*. Track: [a] Pedagogical work; [b] Basic care and welfare; [c] Social work.
Values in parentheses are standard errors.

Using ANOVA, we explored whether there were mean differences in the study variables as a function of age, gender, level of education and track. For age the results showed a small significant difference for identified regulation ($F$ (11,177) = 1.88, $p$ = .045). Regarding gender, results showed only one significant difference between the groups, with male students ($M_{male}$ = 3.15, $SD$ = 0.76) reporting to be significantly more intrinsically motivated to study ($F$ (1,193) = 3.94, $p$ = .049) than female students ($M_{female}$ = 2.84, $SD$ = 0.99). For level of education and type of track, no significant mean level differences were found.

Identified regulation and intrinsic motivation were positively associated with each other as well as with almost all the variables, except for the non-significant negative relation with test anxiety (see Table 2). Introjected regulation only showed a significant positive relationship with test-anxiety and external regulation. Lastly, external regulation showed significant negative associations with autonomy support, structure and self-efficacy, and a positive correlation with test anxiety. All associations were in the low to mid-range.

**Table 2.2** Correlations among Study Variables.

| Variables [a] | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| *Motivational Regulations* | | | | | | | | |
| 1. External regulation | | | | | | | | |
| 2. Introjected regulation | .56** | | | | | | | |
| 3. Identified regulation | -.03 | .11 | | | | | | |
| 4. Intrinsic motivation | -.03 | .19* | .48** | | | | | |
| *Educational context* | | | | | | | | |
| 5. Autonomy support | -.19** | -.07 | .37** | .21** | | | | |
| 6. Structure | -.19** | -.04 | .49** | .29** | .74** | | | |
| 7. Involvement | -.04 | .07 | .44** | .34** | .63** | .70** | | |
| 8. Test anxiety | .21** | .22** | -.13 | -.08 | -.28** | -.18* | -.13 | |
| 9. Self-efficacy | -.14* | .02 | .62** | .37** | .43* | .43** | .42** | -.25** |

*Note.* *p < .050, **p < .010. A mean of the motivational regulations is significantly different from another mean if they have different superscripts. [a] Scales for variables 1–7 ranged from 1–5 and for variables 8–9 ranged from 1–7.

### 2.3.2 Motivational Profiles

The LPA on all four motivational regulations revealed that the four-cluster solution came out as most optimal since the BIC was lowest, the adjusted BIC was lower than with three clusters, and the BLRT value was significant (see Table 2.3).[3]

3 For six clusters, the adj. BIC improved even more, but the values of the BIC became higher, in addition to the emergence of very small clusters without theoretical significance, making this cluster solution less preferable. For seven or more clusters the adj. BIC improved even more, but the values of the BIC and BLRT, VLMR and adj. LMR became higher.

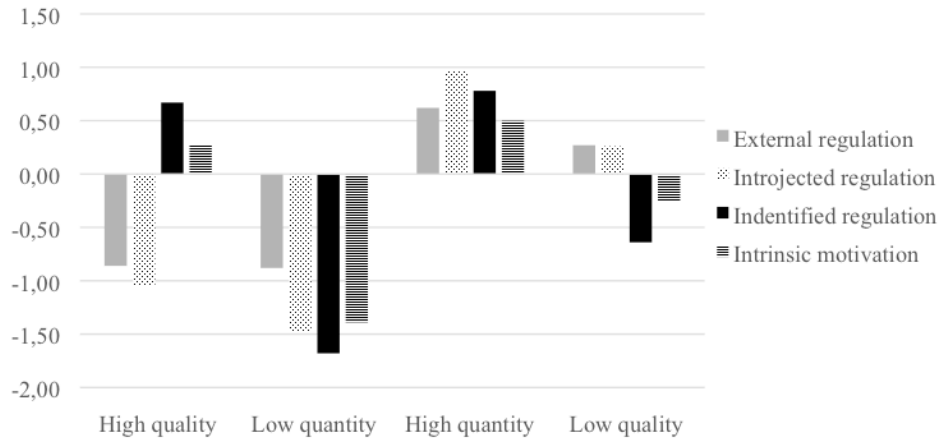
**Table 2.3** Fit Statistics of Latent Profile Analysis for Students' Motivational Profiles.

| Number of clusters | *N* per cluster | BIC[a] | ABIC[b] | AIC[c] | Number of clusters | Ent | VLMR[d] | LMR[e] | BLRT[f] |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 195 | 2170.04 | 2144.70 | 2143.86 | 1 | Na | Na | Na | Na |
| 2 | 75,120 | 2110.39 | 2069.20 | 2067.84 | 2 | .76 | .067 | .062 | <.001 |
| 3 | 23,125,47 | 2097.62 | 2040.60 | 2038.70 | 3 | .80 | .086 | .092 | <.001 |
| 4 | 49,14,53,79 | 2085.28 | 2012.42 | 2010.00 | 4 | .78 | .063 | .068 | <.001 |
| 5 | 43,14,63,43,32 | 2091.36 | 2002.66 | 1999.71 | 5 | .77 | .200 | .212 | .013 |
| 6 | 14,1,67,43,33,37 | 2094.52 | 1989.98 | 1986.51 | 6 | .82 | <.001 | <.001 | <.001 |
| 7 | 61,10,34,27,1,42,20 | 2103.37 | 1982.99 | 1979.00 | 7 | .82 | .716 | .722 | .250 |
| 8 | 12,7,1,20,19,32,16,88 | 2115.73 | 1979.51 | 1974.99 | 8 | .84 | .391 | .394 | <.001 |

*Note*. [a] Bayesian information criterion (BIC);
[b] adjusted Bayesian information criterion (ABIC);
[c] Akaike information criterion (AIC);
[d] Vuong-Lo-Mendell-Rubin likelihood ratio test (VLMR);
[e] Lo-Mendell-Rubin likelihood ratio test;
[f] bootstrap likelihood ratio test (BLRT).

Figure 2.1 displays the z-scores for each of the subscales of motivation for the four different profiles. The first profile (25% of the students) was labelled the 'high quality' profile. Students in this profile had relatively high levels of identified regulation and intrinsic motivation and relatively low levels of external and introjected regulation. The second profile (41% of the students) was the 'low quality' profile, characterised by relatively low levels of identified regulation and intrinsic motivation, and relatively high levels of external and introjected regulation. The third profile, the 'high quantity' profile (27% of the students), was characterised by relatively high scores on all subscales. The fourth profile was named the 'low quantity' profile (7% of the students). These students showed relatively low levels on each of the four types of regulation.

**Figure 2.1**. Z-scores for Motivational Regulations of the Four-Cluster Solution.




MANOVA showed the differences in levels of the individual regulations between the motivational profiles. Post hoc Tukey analyses revealed that identified regulation ($\eta^2 = 0.65$) and introjected regulation ($\eta^2 = 0.72$) specifically differentiate between the different motivation profiles. A chi-squared test was used to examine whether there was any relationship between students' gender, age and their profile. No significant relationship was found for gender ($\chi^2$ (3) = 2.20, $p$ = .532) and age ($\chi^2$ (33) = 41.71, $p$ = .142), indicating that they were not related to profile membership. Therefore, we did not control for gender or age in subsequent analyses.

### 2.3.3 Differences between Students within Motivational Profiles

To investigate differences between the profiles in terms of self-efficacy, test anxiety and perceived motivating (teachers' autonomy support, structure and involvement) a MANOVA was conducted. Results revealed significant differences between the profiles for self-efficacy ($\eta^2 = 0.30$), test anxiety ($\eta^2 = 0.07$); Wilks' lambda = 0.61; F(15, 516.62) = 6.87, $p$ = > .001, as well as perceived autonomy support ($\eta^2 = 0.12$), structure and involvement ($\eta^2 = 0.16$) (see Table 2.4). Across all variables, students in the high quality profile showed the most optimal pattern of relationships. As belonging to this profile is related to higher levels of perceived self-efficacy and perceived motivating teaching, and the lowest levels of test anxiety. However, there were no significant differences between the high quality and the high quantity profile, which also reported more optimal relations with self-efficacy and perceived motivating teaching. Besides that students in the high quantity profile did not significantly differ from the low quality and low quantity profile regarding test anxiety, whereas the students in the high quality profile did. The low quantity and the low quality groups showed less favourable outcomes, reporting the lowest levels of self-efficacy, perceived autonomy support, structure and involvement, and higher levels of test anxiety.

## 2.4 | Discussion

VET is for many students a good start for building a successful career. Unfortunately, however, several VET-students experience problems in their career development. This is often attributed to VET-students' poor motivation. Relying on a person-centred approach, the aim of the present study was to gain more insight into VET-students' motivation by investigating motivational profiles and differences between these profiles in self-efficacy, test anxiety and perceived motivating teaching.

In this study, students in general reported more identified regulation than intrinsic motivation, which could be because VET-students choose a specific track that leads them to their future profession but are still obliged to go to school, making their reasons for studying not completely intrinsic. Identified regulation had a strong positive association with self-efficacy and motivating teaching, which indicates this as an important regulation for positive experiences of the educational context, in line with prior research (Vansteenkiste et al. 2018). Introjected regulation was only positively associated with test anxiety. In this study, external regulation was the most maladaptive regulation and was associated with lower levels of self-efficacy, perceived autonomy support and structure, and higher levels of test anxiety.

**Table 2.4** Means Scores, Standard Errors and Analysis of Variance on All Study Variables for the Motivational Profiles.

| | High quality ($n$ =49;25%) | Low quantity ($n$ =14;7%) | High quantity ($n$ =53;27%) | Low quality ($n$ =79; 41%) | $F$ | $\eta^2$ |
|---|---|---|---|---|---|---|
| *Cluster Dimensions (z-scores)* | | | | Cluster Dimensions (z-scores) | | |
| External regulation | -0.86 (.67)$^{a}$ | -0.88 (.82)$^{a}$ | 0.62 (.86)$^{b}$ | External regulation 0.27 (.82)$^{b}$ | | |
| Introjected regulation | -1.05 (.50)$^{a}$ | -1.48 (.26)$^{b}$ | 0.97 (.61)$^{c}$ | Introjected regulation 0.26 (.53)$^{d}$ | | |
| Identified regulation | 0.67 (.53)$^{a}$ | -1.68 (.83)$^{b}$ | 0.78 (.46)$^{a}$ | Identified regulation -0.64 (.66)$^{c}$ | | |
| Intrinsic motivation | 0.27 (1.05)$^{a}$ | -1.39 (.65)$^{b}$ | 0.50 (.87)$^{a}$ | Intrinsic motivation -0.25 (.78)$^{c}$ | | |
| *Cluster Dimensions (raw scores)* | | | | Cluster Dimensions (raw scores) | | |
| External regulation | 1.79 (.59)$^{a}$ | 1.77 (.72)$^{a}$ | 3.09 (.76)$^{b}$ | External regulation 2.78 (.72)$^{b}$ | 38.84 | .38 |
| Introjected regulation | 1.61 (.55)$^{a}$ | 1.14 (.29)$^{b}$ | 3.82 (.67)$^{c}$ | Introjected regulation 3.05 (.58)$^{d}$ | 165.09 | .72 |
| Identified regulation | 4.47 (.47)$^{a}$ | 2.39 (.73)$^{b}$ | 4.57 (.41)$^{a}$ | Identified regulation 3.31 (.58)$^{c}$ | 119.00 | .65 |
| Intrinsic motivation | 3.17 (1.00)$^{a}$ | 1.59 (.62)$^{b}$ | 3.38 (.83)$^{a}$ | Intrinsic motivation 2.67 (.74)$^{c}$ | 21.28 | .25 |
| *Educational Context* | | | | Educational Context | | |
| Autonomy support[1] | 3.74 (.63)$^{a}$ | 3.21 (.61)$^{bc}$ | 3.53 (.54)$^{ac}$ | Autonomy support[1] 3.23 (.62)$^{b}$ | 8.55$^{**}$ | .12 |
| Structure[1] | 3.64 (.66)$^{a}$ | 3.04 (.36)$^{b}$ | 3.52 (.46)$^{a}$ | Structure[1] 3.15 (.49)$^{b}$ | 12.42$^{**}$ | .16 |
| Involvement[1] | 3.67 (.55)$^{a}$ | 3.08 (.45)$^{b}$ | 3.73 (.59)$^{a}$ | Involvement[1] 3.22 (.61)$^{b}$ | 12.33$^{**}$ | .16 |
| Test anxiety[2] | 3.06 (1.26)$^{a}$ | 3.29 (1.74)$^{ab}$ | 3.72 (1.56)$^{ab}$ | Test anxiety[2] 3.93 (1.20)$^{b}$ | 4.55$^{*}$ | .07 |
| Self-efficacy[2] | 5.54 (.74)$^{a}$ | 4.29 (.74)$^{b}$ | 5.44 (.77)$^{a}$ | Self-efficacy[2] 4.50 (.83)$^{b}$ | 27.72$^{**}$ | .30 |

*Note.*$^{*}$p < .005, $^{**}$p < .001. Values in parentheses are standard errors. A profile mean is significantly different from another mean if they have different superscripts. Differences between the profiles were tested with MANOVA followed by a post hoc Tukey analysis. [1] Measured on a five-point scale. [2] Measured on a seven-point scale.

### 2.4.1 Describing VET-students' Motivational Profiles

Confirming our hypothesis and in line with prior research (Vansteenkiste et al. 2009), four profiles best matched our data to describe VET-students' motivational profiles. Specifically, identified and introjected regulation contributed to the formation of these profiles. The highly quality profile contained students who study based on their personal values, interest and enjoyment, and who feel little pressure. The percentage of students falling in this cluster (25%) was similar to that of prior studies with high school and college students ranging between 19 and 36% (Ratelle et al. 2007; Vansteenkiste et al. 2009; Wormington, Corpus, and Anderson 2012). The low quality profile was characterised by students who study because they feel pressured by others (e.g. parents, friends or teachers) or want to avoid feelings of guilt and shame. As expected, the percentage of students in the low quality profile (41%) was much higher than that found in other studies, ranging from 5.9 to 27% (Ratelle et al. 2007; Vansteenkiste et al. 2009; Wormington, Corpus, and Anderson 2012). The percentage of students in the high quantity profile (27%) was about the same as that found by Vansteenkiste et al. (2009). In contrast Wormington, Corpus, and Anderson (2012) found a higher percentage of high school students in the high quantity profile (43%). Students in the high quantity profile feel pressured to study but are also driven by personal values or interest. The low quantity profile consisted of students that felt neither pressure nor interest to study. The low quantity group was much smaller (7 %) compared to other studies (25–35%; Ratelle et al. 2007; Vansteenkiste et al. 2009) among high school and college students, but similar to Wormington, Corpus, and Anderson (2012), who reported 11% of high school students to be in this profile.

In sum, our sample of VET-students was divided into a large number of students with a low quality profile, two moderate groups of students respectively within the high quality and quantity profile, and a relatively low number of students with low scores on all regulations. These results add to the research confirming these four motivational profiles, but also indicate that there can be distinct differences in the distribution of these profiles within different target groups. Furthermore, as controlled motivation is associated with more negative student outcomes (Barkoukis et al. 2014; Soenens and Vansteenkiste 2005; Vallerand, Fortier, and Guay 1997), the relatively large group of students in the low quality profile could indicate that there is indeed a considerable group of students that is at risk of adverse outcomes, especially in the long run (e.g. drop out, unemployment).

### 2.4.2 Differences between Motivational Profiles

As expected, students in the high quality profile demonstrated the most favourable relations with experiences of the educational context; higher levels of self-efficacy, and perceived motivating teaching and less test anxiety. In contrast, students in the low quality profile had the poorest experiences. Differences between profiles were most pronounced for the high quality and the low quantity profiles (on all variables related to the educational context), and the high quality and low quantity profiles, which differed on self-efficacy and perceived motivating teaching but not on test anxiety. For the high quantity profile the levels of perceived autonomy support and test anxiety were between the high quality and the other two groups. These findings are in line with previous research (Hayenga and Corpus 2010; Henderlong et al. 2016; Ratelle et al. 2007; Vansteenkiste et al. 2009) and indicate that fostering autonomous forms of motivation may lead to higher self-efficacy and lower levels of test anxiety.



The differences between the high quantity and the high quality profiles, however, were far less pronounced compared to prior research. Furthermore, the low quantity and low quality profiles seemed to report equally poor experiences, whereas in prior research the low quality students reported the poorest outcomes. Yet, the lack of differences found in the current study might be partially due to the fact that the levels of external regulation were not that large in the group that was labelled as low quality. Indeed, external regulation in particular was associated to lower levels of self-efficacy, perceived motivating teaching and more test anxiety, whereas introjected regulation was only positively related to test anxiety. Other authors found similar results as the one's found in our study (Wormington, Corpus, and Anderson, 2012) and concluded educational settings with a controlling nature, such as VET, controlled types of motivation may be less maladaptive than in other educational settings that speak more towards students' autonomous motivation. Overall, such findings call for future research to compare whether the meaning of the motivational profiles may differ according to students' educational context.



### 2.4.3 Limitations and Directions for Future Research

This study is one of the first to describe VET-students' motivation by applying latent profile analyses on almost the whole range of behavioural regulations. The current study also has some limitations. Firstly, our research was cross-sectional and therefore prevents us from investigating the directionality of effects. Future research should employ a longitudinal design to analyse whether students' perceptions of motivating teaching influence their motivation or the other way around, or both. Furthermore, a longitudinal design with several repeated assessments would allow investigating critical time points at which students become demotivated or even formulate dropout intentions.
Secondly, by asking students to give an opinion on their entire team of teachers, we were unable to investigate differences in the degree of motivating teaching per individual teacher. It is very likely that students have different preferences in terms of teachers and subjects. Hence, further research is necessary to investigate how the motivation of students is linked to the motivating teaching of individual teachers within a team and/or different subjects (for instance, practical versus generic subjects) within the curriculum. This future research may answer questions like; can one motivating teacher in a team or one motivating subject be decisive for students 'motivation?

Thirdly, this study was conducted with a relatively small sample of similar tracks within one single institute for vocational education and therefore has limited generalisability to the population of VET-students as a whole. Future studies should recruit larger samples, across more schools in different regions/countries, as well as different tracks at different levels, to investigate whether the relatively large group of controlled motivated students holds.

### 2.4.4 Practical Implications

The relatively large group of students-almost half of the students-in the controlled motivation profile highlights that there is indeed a group of VET-students that might require extra attention to support them in successfully building their careers. One fruitful avenue might be to focus on teachers and how they can apply more motivating teaching behaviour. Intervention studies on applying motivating teaching and more motivating elements in curricula based on SDT (Aelterman et al, 2014 ; Reeve et al. 2004; van der Veen et al. 2013; White and Laczik 2016) show promising results in terms of fos-

tering students' (autonomous) motivation. As our results suggest that VET-students are not a homogenous group but that they are quite diverse in their reasons for studying, it seems important to tailor interventions to fit the motivational needs of different students.

Next to teachers, it may be important to think about whether curricula and the school climate could also be designed in a more motivating way (Ratelle et al. 2007). Our findings might indicate that schools paying more attention towards fostering students' interest and relevance while refraining from using external pressure (applying more motivating teaching behaviour) could support students to believe in their own abilities. We found that students in the low quality profile had less faith in their abilities and were more afraid of tests. In addition to supporting teachers in adopting more motivating teaching behaviour, it may be fruitful to re-evaluate the amount of and strong focus on summative assessment currently existent within VET. As self-efficacy and test anxiety are related, more motivating ways of testing, with a stronger focus on students' own development (formative assessment), could increase the belief students have in themselves, further fostering their autonomous motivation (Becker et al 2018; Dubeau, Plante, and Frenay 2017; Gulikers, Runhaar, and Mulder 2018; Meijer 2001).

## 2.5 | Conclusion

Within our sample, VET-students' motivational profiles were diverse. Many students were autonomously motivated but there was also a relatively large group (41%) which predominantly felt obligated to study. The results of this study demonstrated that controlled motivation especially external regulation was related to negative consequences for students, whereas autonomous motivation especially identified regulation was related to more positive student outcomes. The large group of students in the controlled motivation profile may require additional attention to build their self-efficacy and reduce their test anxiety with more motivating teaching and assessment. The results further suggest that it may be important for schools to focus on reducing external pressure and to emphasise the personal relevance to foster students' autonomous motivation.



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# CHAPTER 3

## Fostering student engagement with motivating teaching: An observation study of teacher and student behaviours

**Based on:**

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# Abstract

Given the importance of student engagement for students' current and future success, it is essential to explore how teachers can foster student engagement within lessons. This study relied on classroom observations to describe how teachers applied Self-Determination Theory (SDT) related (de)motivating teaching behaviours to foster students' engagement. Results from 120 observed lessons of 43 teachers indicated there were distinct relations between motivating teaching behaviours and student engagement. Most striking regarding the use of motivating teaching behaviours were the higher levels of relatedness support and guidance during activities in lessons in which students showed the highest levels of engagement. Conversely, in lessons where students were least engaged, teachers showed higher levels of chaotic teaching behaviours. Analyses of behaviours within lowly and highly engaging lessons showed that teachers in highly engaging lessons were observed to start with high levels of enthusiasm and after about ten to fifteen minutes focused on activating their students by offering room for experimenting and support while students worked on assignments. In contrast, teachers in lowly engaging lessons seemed to have a tendency to employ demotivating teaching behaviour at the start of the lesson. Implications and directions for future research are discussed.




*"It is the students who do the learning and if they resist or minimize their investment, attention or effort, not much will be accomplished" (Good and Brophy, 1987, p. 305).*

## 3.1 | Introduction

Research shows that student engagement constitutes a crucial precondition for optimal and deep-level learning (Barkoukis, Taylor, Chanal and Ntoumanis 2014; Skinner 2016; Skinner, Zimmer-Gembeck and Connell 1998). In addition, student engagement is associated with students' motivation to learn (Aelterman, Vansteenkiste, Haerens, Soenens, Fontaine, & Reeve 2012), and their persistence to complete school (Archambault, Janosz, Fallu and Pagani 2009; Rumberger and Lim 2008; Wang and Fredricks 2014). Moreover, students who are engaged at school show better long-term vocational opportunities (Abbott-Chapman, Martin, Ollington, Venn, Dwyer, and Gall 2014).

As many teachers will recognize, students vary considerably in their engagement during lessons (Biggs 2012; Wang and Peck 2013). Some students are highly engaged (i.e. paying attention or putting in effort in assignments), while others do not engage in learning activities at all (Biggs 2012). Considering the importance of student engagement for students' current and future success, fostering student engagement is essential (Quin 2017) and how teachers interact with students on a day-to-day basis could be of influence (Jang, Kim and Reeve 2016; Nguyen, Cannata and Miller 2018; Quin 2017). Engaging students, however, while simultaneously teaching a subject and maintaining classroom management, is a complex and challenging task, to say the least.

In the current study, we relied on self-determination theory (SDT, Ryan and Deci 2000), to describe the classroom dynamics related to observed student engagement and (de)motivating teaching behaviours within lessons. Our main aim was to explore which specific motivating teaching behaviours were associated with high levels of student engagement and which demotivating teacher behaviours were associated with low levels of student engagement. Studying how these (de)motivating teaching behaviours are applied in the everyday practice of teaching could provide support for teachers and teacher educators to further explore and create ways to foster the engagement of students.

This study was specifically conducted among students in senior secondary vocational education (VET). There are indications that VET-students start their first year with particularly low levels of motivation (Dubeau, Plante and Frenay 2017; Vugteveen, Timmermans, Korpershoek, van Rooijen and Opdenakker 2016), and predominantly go to school because they feel pressured (Cents-Boonstra, Lichtwarck-Ashoff, Denessen, Haerens and Aelterman 2018; Drechsel, Prenzel, Kramer 2002). Within VET a significant number of students seem to experience challenges with their motivation for learning (Cents-Boonstra et al. 2018; Dubeau et al. 2017; Elffers 2011; Vugteveen, et al. 2016). Students' motivational challenges may be reflected in their actions in terms of low student engagement or even disengagement in lessons, demanding quite some motivational skills from their teachers.

### 3.1.1 Student Engagement

Student engagement is defined and operationalized in many ways (Skinner 2016; Wigfield Eccles, Fredricks, Simpkins, Roeser, and Schiefele, 2015). Student engagement includes very generic behaviours like attending school or participating in different school activities. However, when observing student engagement within lessons, a more situational focus related to the specific engagement of students within a particular lesson is taken. In general, three aspects of engagement are distinguished: emotional; behavioural; and cognitive engagement.

*Emotional* engagement is defined as students' affective reactions to classroom activities, such as the expression of positive affect (i.e. students are enjoying the lessons; Van Uden, Ritzen and Pieters 2014). Students are considered *behaviourally* engaged when they are involved in observable behaviour directly related to the learning process (Skinner 2016). Nguyen et al. (2018) have divided behavioural engagement into passive behavioural engagement (e.g. paying attention in class) and active behavioural engagement (e.g. asking questions, putting effort into assignments). Active behavioural engagement aligns with the concept of agentic engagement, which has been examined as a fourth dimension of student engagement in recent SDT-based work (Reeve and Tseng, 2011). *Cognitively* engaged students understand the importance of their education (i.e. formulate their own learning goals; Van Uden et al. 2014). Distinguishing these different aspects of student engagement does not mean, however, that they are independent or exclusive (Van Uden et al. 2014). For students to enjoy the lesson (emotional engagement), they also have to pay attention (behavioural engagement).

Although student engagement is a multidimensional concept, observational studies to date have commonly used aggregated measures as indicators of student engagement (Jang, Reeve and Deci 2010; Reeve, Jang, Carrell, Jeon, and Barch 2004; Van den Berghe, Cardon, Tallir, Kirk and Haerens 2016). However, lumping different indicators of student engagement together, ignores the fact that student engagement is a multidimensional concept and may neglect important distinctions in the different indicators of student engagement (e.g. active versus passive). To develop a more detailed understanding of how students engage themselves within different lessons, the current study aimed at investigating a range of indicators of student engagement separately across a rich sample of lessons.

### 3.1.2 (De)motivating Teaching Behaviour

According to SDT, student engagement is fostered when teachers manage to support students' three basic psychological needs, while the thwarting of these needs is likely to result in student disengagement (Van den Berghe et al. 2016). Specifically, the need for autonomy refers to experiencing a sense of psychological freedom and volition to be yourself, the need for competence refers to feeling able to achieve success, and relatedness refers to experiencing a close bond.

Even though in the end it is the students themselves that (un)consciously decide to engage or disengage within lessons, teachers can certainly exert a significant influence on their students' engagement (Quin, Hemphill and Heerde, 2017; Shernoff et al. 2016). Within SDT, it is assumed that student engagement is fostered when teachers support students' autonomy, provide structure and are involved in warm interactions (relatedness support) with their students, and students thus experience greater need satisfaction (Jang, Reeve and Halusic 2016; Niemiec & Ryan, 2009; Reeve, 2002). But what are the concrete teaching behaviours that are indicative of supporting these basic needs?

To experience a sense of autonomy, it is important that students experience their engagement in learning as a self-chosen act that reflects their own interests, preferences and values (Stroet, Opdenakker and Minnaert, 2013). To foster this need, teachers can invite students to provide input about the content of a lesson (e.g. reserve time in the lessons for substantive questions or students' interest), allow students to take the initiative and to explore (Haerens, Aelterman, Van den Berghe, De Meyer, Soenens and Vansteenkiste 2013), offer a minimal amount of meaningful choices (Mouratidis, Vansteenkiste, Sideridis and Lens, 2011; Niemiec and Ryan 2009), and provide meaningful rationales (Vansteenkiste, Aelterman, De Muynck, Haerens, Patall, and Reeve 2018).

Structure has been defined as the provision of desired information and guidance such that students can successfully achieve various outcomes (Grolnick and Pomerantz 2009; Skinner and Belmont 1993). When observed, structure was found to consist of two dimensions: structure in the lesson plan and instructions (i.e. structure before activity; Haerens et al., 2013); and offering guidance during learning activities (i.e. structure during activity; Haerens et al., 2013). When providing structure before the activity, teachers communicate clear guidelines, give an overview and objectives for the lesson and share their expectations (Jang, Reeve and Deci 2010; Sierens, Vansteenkiste, Goossens, Soenens, and Dochy 2009; Vansteenkiste et al. 2012). This can also be defined as a clarifying approach (Aelterman, Vansteenkiste, Haerens, Soenens, Fontaine and Reeve 2019). Structure during activities entails the guidance that a teacher offers to students by providing new guidelines and help during exercises, using students as positive role models (Haerens et al. 2013), and providing constructive, informational feedback (Aelterman et al. 2019; Jang et al. 2010).

According to SDT, relatedness support refers to an open, honest and caring attitude that leads to the development of a mutually positive relationship between student and teachers. In practice, relatedness support, for example, translates into individualized teacher–student conversations (e.g. about students' daily life), the promotion of cooperation and teamwork (e.g. helping a classmate) and the display of a responsive attitude (e.g. when a student is upset). This requires teachers to put energy and enthusiasm into the lessons, care for their students, pay attention to what students are saying, ensuring students feel personally accepted (Haerens et al. 2013; Kopershoek, Canrinus, Fokkens-Bruinsma and De Boer 2019; Sparks, Dimmock, Lonsdale and Jackson 2018).

Besides knowing what is effective to foster student engagement, it is equally important to understand the teaching behaviours that likely lead to low engagement or even disengagement and can best be avoided. Demotivating teaching behaviours are also described as the 'dark side' of SDT and have only recently emerged on researchers' agenda (Haerens, Aelterman, Vansteenkiste and Soenens 2015). Within SDT, demotivating teaching behaviours, each thwarting a specific basic need, have been distinguished as: control (autonomy); chaos (competence); and cold teaching (relatedness).

*Controlling* teaching behaviour consists of tactics to pressure students to act, think or feel in specific ways, thereby exerting either external control by threatening with sanctions, yelling, intimidating and offering contingent rewards, or internal control by inducing feelings of guilt, shame and anxiety (De Meyer et al. 2014). *Chaotic* teaching behaviour involves an awaiting or abandoning stance (Aelterman et al. 2019), characterized by the absence of clear goals and a lack of information on how to achieve goals if they are provided (Jang et al. 2010; Van den Berghe et al. 2013). Finally, *cold* teaching behaviour entails being unfriendly or even rejecting or excluding students (Skinner and Belmont 1993), being distant or distracted, and paying little attention to students in general (Van den Berghe et al. 2013).

### 3.1.3 Fostering Student Engagement with (De)motivating Teaching Behaviour in Practice

Although ample studies have demonstrated that motivating teaching behaviour relates to higher student engagement (Quin 2017), most of this research has been conducted using questionnaires tapping into students' perceptions of the teacher's teaching style (Jang et al. 2016; Molinari and Mameli 2018), often combined with teacher self-reports (Quin 2017; Van den Berghe, Tallir, Cardon, Aelterman and Haerens 2015). There are only a small number of available observational studies (e.g. Haerens et al. 2013;, Jang et al. 2010; Reeve et al. 2004; Van den Berghe et al. 2013; Van den Berghe et al. 2016) and only three of these studies observed teaching behaviours that were related to observable students' engagement (i.e., Jang et al. 2010; Reeve et al. 2004; Van den Berghe et al. 2016), usually using aggregated scores over a lesson.

In general, these studies indicate that observed motivating teaching behaviour (Reeve et al. 2004) is positively related to student engagement (Jang et al. 2010; Reeve et al. 2004; Van den Berghe et al. 2016). In addition, Reeve et al. (2004) showed in an observational study that students responded to teachers with higher levels of motivating teaching, with greater engagement. Furthermore, Jang et al. (2010) specifically observed teachers' autonomy support and structure and found that a combination of both was positively related to students' behavioural engagement. Moreover, observational research showed that demotivating teaching behaviour, although low in occurrence, had a substantial negative impact on student engagement (De Meyer et al. 2014; Van den Berghe et al. 2013).

In sum, there is accumulating research supporting the link between (de)motivating teaching behaviour and student engagement. Much less is known, however, on the multiple ways in which teachers apply these different behaviours in practice (Stroet, Opdenakker and Minneart 2015a). So far, prior research has indicated that within lessons teachers use different (de)motivating behaviours simultaneously (Aelterman et al. 2019; Haerens et al. 2018; Vansteenkiste et al. 2012), triggered by teacher factors as well as student factors. On the one hand teachers' (de)motivating behaviour is influenced by trait-like teacher factors, such as teachers' own motivational orientation (Van den Berghe et al. 2013), beliefs (Hornstra, Mansfield, Van der Veen, Peetsma and Volman 2015) and a preferred teaching style (Aelterman, Vansteenkiste, Van Den Berghe, and De Meyer 2014; Reeve 2009). On the other hand, teachers' (de)motivating behaviour is also largely triggered by situational factors. Examples of which are: the lesson subject; students' behaviours (Matos, Reeve, Herrera, and Claux 2018; Van den Berghe et al. 2016); heavy workloads; feeling pressured (Pelletier, Seguin-Levesque and Legault 2002; Pelletier and Sharp 2009; Ryan and Deci 2016); and negative perceptions of students' abilities or motivation (Hornstra et al. 2015). In other words, teachers' adoption of motivating and demotivating teaching behaviours may differ from lesson to lesson (Hornstra, Stroet, Van Eijden, Goudsblom and Roskamp 2018; Krijgsman et al. 2019; Reeve. 2016; Van den Berghe et al. 2013). Moreover, there might be specific patterns during lessons of teachers' and students' behaviours that can be identified to understand how the interplay between teacher behaviour and student engagement develops within the course of lessons. Van den Berghe et al. (2016), for example, found positive associations between motivating teaching and observed student engagement within the first 15 minutes of lessons.

### 3.1.4 The Present Study

A limitation of these earlier studies is that often (de)motivating teaching behaviours were investigated in general and student engagement was most often defined as an aggregated measure throwing all dimensions together in a single scale. Looking at averages of student engagement and all (de)motivating teaching behaviours across a sample of lessons neglects possible situational differences in these behaviours. In addition, this approach provides quite broad recommendations for teachers for fostering students' engagement. From an extensive SDT literature review Haerens et al. (2013) and Van den Berghe et al. (2013) developed an observational tool that describes about 40 different concrete (de)motivating teaching behaviours.

Our aim was to extend prior observational work in this field by providing a more fine-grained approach, i.e. to describe the use of these concrete (de)motivating teaching behaviours and their specific associations with different aspects of student engagement. In addition, the present study describes the differences in the use of (de)motivating teaching behaviours between contrasting lessons with either high or low student engagement. Illustrating the differences between the use of (de)motivating teaching behaviours in extremely contrasting lessons in terms of students' engagement could lead to more specific recommendations for fostering student engagement for teachers. Specifically, the following research questions were addressed:

1. *What is the occurrence of motivating teaching behaviours and indicators of student behaviour within lessons?*
2. *How are (de)motivating teaching behaviours associated with different indicators of student engagement?*
3. [a] *What are the differences in the use of (de)motivating teaching behaviours between lessons with high student engagement versus lessons with low student engagement?*
   [b] How do teachers apply (de)motivating teaching behaviours during the course of lessons with either high or low student engagement?

## 3.2 | Method

### 3.2.1 Participants

Almost half of the students in the Netherlands (41%) continue their post-secondary education within VET from the age of 16, usually after finishing lower secondary vocational education. The primary purpose of VET is to prepare students for a vocation (e.g. child-care worker, nurse, baker, or mechanic). For this study, we took a convenience sample of teachers from one VET-college that wanted to explore effective ways to foster student classroom engagement. After discussing the study, the managers of four teams providing tracks in Basic Care & Welfare (level 2[4]), Social Cultural Work or Pedagogical Work (level 4) indicated that they would like to participate in the study.

From these four teams two teachers did not want to participate due to personal circumstances and were not included. In total, 53 teachers and their first-year students participated in this study. After careful review of the data, one lesson of a student-teacher was removed from further analyses because it showed disproportionally high levels of chaotic teaching behaviour and of students giving up. Thus, in total the lessons of 52 teachers[5] were analysed in this study. The mean age of the participating teachers was 42.7 (*SD* = 11.47), ranging from 23 to 64, and 75.5% (*n* = 40) were female. Participants had on average 12.77 years of teaching experience (*SD* = 9.44, ranging between 0 and 38 years), and 8.58 years of experience specifically within VET (*SD* = 7.19, ranging between 0 and 35 years) .[4] The observed lessons included a wide variety of lessons: 36 lessons in general subjects (e.g. Dutch or English); 10 lessons in creative subjects (e.g. drama, music); 61 lessons in vocational subjects (e.g. developmental psychology, pedagogics, coaching or providing activities for kids); and 13 lessons related to a form of counselling (e.g. discussing students' development and results or guiding their internships).

### 3.2.2 Procedure

This study was conducted in the second semester of the first year. All teachers who taught first-year students in the participating tracks received an invitation to participate in the study and were asked to provide active consent. Teachers were assured that their data would be handled anonymously and that they had the right to withdraw permission at any time. As classroom observations were used, all students taught by these teachers received an invitation to participate in the study and were asked to inform us if they did not want to participate. When students were under the age of 18, their parents received the same information. No students or parents withheld their consent for participation. This study was approved by the ethics committee of the faculty of Social Sciences of Radboud University (ECSW2015-1901-285).
Prior to the classroom observations, teachers were asked to fill out a short online survey on their background characteristics using Google Drive. After teachers had filled in the survey, they received a preliminary schedule for the classroom observations. Lesson recordings were planned from the teachers' lesson schedule and per availability of the camera equipment. The suggestions for recording dates and times were sent to the teacher and upon agreement the recordings were scheduled. When there were unexpected changes in the time schedule, for instance because teachers were absent on the predetermined date (e.g. due to illness), a new date and time were scheduled.

We intended to record three lessons per participating teacher to minimize the influence of random factors (e.g. having a bad day) and reduce the camera effects. Due to practical constraints, this was not possible for all teachers, resulting in a mean of 2.75 (*SD* = 0.55) recorded lessons per teacher. The focus was on recording lessons given to the same class of students and preferably on the same subject. This was done to keep conditions across lessons as similar as possible and to minimize effects on teachers' behaviour that are related to teaching a certain subject or teaching to a certain group of students.

In total, we recorded 144 lessons of 52 teachers between February 2015 and June 2015. For nine of these teachers there was no way of knowing which students attended the recorded lessons as they did not work with fixed classes of students. Therefore, we did not include these lessons in the analyses. In total, we analysed 120 recordings with known teacher–class combinations in which 43 teachers provided lessons to 14 different classes of students. Teachers from the same team provided lessons for multiple classes of first-year students and we recorded them in the class that most conveniently fitted the recording schedule. The number of recorded teachers per class varied from one teacher, who was the only teacher recorded teaching one lesson to a certain class, to nine teachers, who were recorded providing 25 lessons to the same first-year class. Only one teacher was recorded teaching three different classes, all other teachers were recorded teaching the same classes in all of their recorded lessons. In the case of 12 teachers we did not manage to record all the lessons in the same subject, so they were recorded teaching different subjects to the same class, as in previous recordings.

Lesson recordings were not equally spaced in time nor consecutive within the teachers' course, primarily due to pragmatic reasons (e.g. scheduling and availability of the equipment). For some teachers, the recorded lessons were two weeks apart, while for others there was a month, or even two months in between. The standard lesson duration was 45 minutes, although some lessons ended earlier; the shortest lesson was 25 minutes.

For the recordings two cameras were used: one facing the teacher and the other facing the students. There were instances where there was only one camera available. In that case, the camera was placed in the most optimal position facing teacher and students. The cameras were attached to a computer that put both recordings next to each other in one video file. This shared view enabled coders to code teacher and student behaviour at the same time.

### 3.2.3 Observation Instruments

**Student engagement.** Collective student engagement was observed with five items from an observational instrument developed by Reeve et al. (2004), and adjusted and translated by Aelterman et al. (2012). This observational instrument combines different

[4] Vocational education in the Netherlands is divided into four levels. For example, in a specific track these levels correspond to:

1. Assistant employee (Care aid)
2. Employee (Supporting in care and welfare).
3. Independent employee (Practical Nurse)
4. Specialized professional (Nurse)

[5] The sample included six student teachers teaching independently in their last year of study; they were not employed by the institute.

aspects of students' engagement, such as their attention, effort, verbal participation, persistence and positive emotion.

The five items within this observational instrument appeared to refer to different aspects of student engagement in different degrees from passive to active. For example: emotional engagement ('students are having fun and enjoy the lesson'); passive behavioural engagement ('students pay attention'); and active behavioural engagement ('students ask questions'). Cognitive engagement was not part of this study, as this type of engagement is difficult to assess through observations. The original item 'students don't give up easily during a task' was changed to 'students give up easily' because this was much clearer to observe in class.

**Motivating teaching behaviour.** Motivating teaching behaviours were observed with an instrument developed by Haerens et al. (2013). First, we measured the use of behaviours related to autonomy support (3 items, for example 'The teacher offers choice to all students'). Items related to structure were divided into two different aspects of structure: structure before activity (5 items, for example 'The teacher provides clear and concise instructions'); and structure during activities (7 items, for example 'The teacher gives positive feedback (e.g.: "Okay, keep going", "Good work")'. Lastly, we measured the use of teaching behaviours related to relatedness support (5 items, for example 'The teacher is close to the students, physically close').

Since this instrument was originally designed for the context of physical education, the wording of the items required slight adaptations to fit lessons for all types of subjects. Two items were added to assess autonomy support: 'The teacher uses inviting language ("may", etc.)' and 'The teacher provides room for students to contribute to the content of the lessons'. In total, 23 motivating teaching behaviours were coded in the present study.

**Demotivating teaching behaviour.** Demotivating teaching behaviours were observed with an instrument developed by Van den Berghe et al. (2013). The instrument includes behaviours related to controlling teaching (7 items, for example 'The teacher exercises power, interrupts students, and claims respect'), chaotic teaching (4 items, for example 'The teacher loses time with reorganizing groups, material, moving tables') and cold teaching (5 items, for example 'The teacher pays little attention to the students'). This instrument also was originally designed for the context of physical education, thus wordings were changed where necessary. In total, 16 demotivating teaching behaviours were coded in the present study.

### 3.2.4 Coding Observations

Two undergraduate and three graduate social science students coded the videos under supervision of the first author and after having received a training. In the first training session, coders were introduced to SDT and by means of one example lesson all codes were introduced. Subsequently, all coders were asked to code the same two test videos. Differences in coding were discussed to reach agreement. This procedure was repeated until an acceptable level of inter-rater agreement was reached (ICC = .73). The coding manual was refined after each training session.
For every five-minute interval of a recorded lesson, indicators for students' collective engagement and (de)motivating teaching were coded. We coded a maximum of 45 minutes (9 intervals) per lesson, as this was the maximum duration for one lesson at the VET college. For each item, coders assigned a score from 0 ((almost) never observed) to 1 (sometimes observed), to 2 (observed often), to 3 ((almost) always observed) for each five-minute interval. To compute the inter-rater reliability, 13% of the videos were double-coded. Intraclass correlation (ICC) estimates were calculated based on a mean-rating ($k$ = 4), consistency, 2-way mixed-effects model. The inter-rater reliability for the combination of the three observational instruments was moderate to good (ICC = .75).

### 3.2.5 Plan of Analysis

To answer the first research question, descriptive statistics and correlations were performed for all study variables across all recorded lessons ($n$=120). In addition, we made a distinction between lessons with high student engagement versus lessons with low student engagement. This distinction was based on the mean level of student engagement calculated per lesson on four items of student engagement (without the indicator: giving up easily). Based on the means of student engagement and motivating teaching behaviour, all lessons were visually depicted in a graph to be able to describe the differences in lessons in terms of student engagement and motivating teaching behaviour.

Based on the mean of student engagement, the 10% most engaging and 10% least engaging lessons were selected. Mean levels, standard deviations and ranges were calculated for the most and least engaging lessons to explore the differences in the use of (de) motivating teaching behaviours. Furthermore, to explore the differences in the specific use of (de)motivating teaching behaviour within lessons in more detail, the teaching behaviours with the strongest associations per SDT dimension were selected. For these teaching behaviours the mean levels of observed behaviour were calculated per interval, to investigate whether teaching behaviours were used more in the beginning, middle or towards the end of the lesson.

## 3.3 | Results

### 3.3.1 Descriptive Statistics regarding the occurrence of motivating teaching behaviours and indicators of student behaviour within lessons

With regards to teaching behaviours, teachers scored highest on relatedness support while behaviours related to providing structure before and during activities were far less frequently observed. Additionally, demotivating teaching behaviours were hardly ever observed during lessons. Inspection of the means of the student engagement items, aggregated across all lessons (see Table 3.1), showed that the scores for paying attention (passive behavioural engagement) and enjoyment (emotional engagement) were above the mid-range of the scale (0–3). Students were hardly ever observed to give up during lessons. But they were far less frequently observed asking questions or putting effort into the class (active behavioural engagement). These scores were below the mid-range of the scale.

### 3.3.2 Associations between (de)motivating teaching behaviours and indicators of student engagement

Most of the associations between the study variables were low to moderate. There were some quite positive associations between motivating teaching behaviour and indicators

of student engagement. Teachers' autonomy support (e.g. asking for students' participation, using inviting language), structure during activity (e.g. providing positive feedback, addressing students by their first name) and all items of relatedness support were positively associated with students' attention and enjoyment (passive student engagement). With regards to indicators of active student engagement, the same dimensions but slightly different motivating teaching behaviour seemed to be of importance. Autonomy support (e.g. offering choice and room to experiment), structure during activity (e.g. offering new tips and support during exercises) and relatedness support (e.g. teachers' enthusiasm, empathy and attention) showed positive associations with students asking questions and putting effort into the lesson. Unexpectedly, we also found a negative association between teachers' provision of structure before activity (e.g. offering a rationale and clear verbal instructions) and students' effort within lessons. Regarding the use of demotivating teaching behaviours, items of controlling (e.g. exercise power, irritation) and chaotic teaching behaviours (e.g. allowing chaos, using an illogical structure) were specifically negatively associated with indicators of passive and active student engagement. In addition, the use of destructive criticism was the only teaching behaviour that was positively associated with students giving up easily.

**Table 3.1**. Means, standard deviations among all study variables and correlations with student engagement for all recorded lessons

| | M | SD | 1a | 1b | 1c | 1d | 1e |
|---|---|---|---|---|---|---|---|
| Student engagement | | | | | | | |
| 1a pay attention | 2.15 | 0.44 | | | | | |
| 1b put in effort | 1.17 | 0.77 | | | | | |
| 1c ask questions | 1.19 | 0.64 | | | | | |
| 1d give up easily | 0.04 | 0.10 | | | | | |
| 1e enjoyment | 2.03 | 0.43 | | | | | |
| *Autonomy support* | | | | | | | |
| Asks for participation in the lesson content | 0.30 | 0.51 | .38** | .04 | -.19* | -.05 | .36** |
| Offers choice to all students | 0.19 | 0.29 | .08 | .21* | .22* | -.09 | .03 |
| Gives the opportunity to experiment | 0.65 | 0.74 | -.18 | .43** | .08 | -.05 | .03 |
| Uses differentiation | 0.04 | 0.18 | .04 | .13 | .09 | -.04 | .08 |
| Uses inviting language | 0.98 | 0.54 | .32** | .03 | .18 | -.11 | .24** |
| *Structure before activity* | | | | | | | |
| Offers the students a rationale | 0.44 | 0.43 | -.04 | -.32** | -.01 | -.04 | -.13 |
| Gives an overview of the lesson | 0.25 | 0.27 | -.04 | -.15 | .20* | .01 | -.12 |



| | M | SD | 1a | 1b | 1c | 1d | 1e |
|---|---|---|---|---|---|---|---|
| Gives clear (verbal) instructions | 0.91 | 0.59 | .02 | -.37** | .14 | .01 | -.11 |
| Provides variation | 0.08 | 0.19 | -.10 | -.06 | -.03 | -.01 | -.06 |
| Demonstrates, is a 'model' for the students | 0.13 | 0.34 | -.14 | -.16 | -.10 | .03 | -.06 |
| *Structure during activities* | | | | | | | |
| Offers students a rationale | 0.37 | 0.43 | -.04 | -.17 | .21* | -.03 | -.03 |
| Monitors if students live up to instructions | 0.62 | 0.52 | -.06 | .21** | .07 | .10 | -.08 |
| Offers students new guidelines, tips and advice | 0.55 | 0.63 | .10 | .56** | .46** | .07 | .07 |
| Provides positive feedback | 0.46 | 0.45 | .19* | .29** | .27** | -.06 | .27** |
| Uses students as positive role models | 0.06 | 0.13 | .18 | .12 | .20* | .16 | .20** |
| Offers help during exercises | 0.66 | 0.70 | .09 | .65** | .10 | .08 | .10 |
| Addresses students by their first name | 1.02 | 0.69 | .24** | .03 | .20* | .04 | .20* |
| *Relatedness support* | | | | | | | |
| Is physically nearby the students | 2.00 | 0.45 | .26** | .17 | .11 | .03 | .25** |
| Is enthusiastic and eager | 1.69 | 0.53 | .46** | .20* | .35** | .01 | .52** |
| Puts effort and energy into the lesson | 2.00 | 0.51 | .43** | .11 | .11 | .08 | .48** |
| Takes the perspective of students, is empathic | 1.91 | 0.64 | .45** | .22* | .42** | -.01 | .40** |
| Pays attention to what the students are saying | 2.19 | 0.55 | .43** | .21* | .27** | .13 | .42** |
| *Control* | | | | | | | |
| Exercises power over the students | 0.05 | 0.13 | -.18* | -.18* | -.09 | -.11 | -.27** |
| Commands students, uses controlling language | 0.40 | 0.43 | -.16 | .10 | .26** | .18 | -.23** |
| Is irritated, loses his/her patience | 0.07 | 0.17 | -.31** | -.19* | -.04 | >.01 | -.44** |
| Yells at the students | >0.01 | 0.02 | -.02 | -.20* | .01 | -.08 | -.15 |
| Pressures the students by appealing to their self-confidence or induces guilt | 0.03 | 0.08 | .08 | .10 | .01 | .12 | -.03 |
| Uses destructive criticism | 0.03 | 0.09 | -.02 | .06 | .07 | .38** | -.14 |
| Does not allow input from the students | 0.02 | 0.06 | -.11 | -.11 | .05 | .09 | -.19* |

| | M | SD | 1a | 1b | 1c | 1d | 1e |
|---|---|---|---|---|---|---|---|
| *Chaos* | | | | | | | |
| Loses time with the reorganization of groups, equipment | 0.06 | 0.12 | -.16 | -.19* | -.17 | -.06 | -.10 |
| Doesn't know the students' names | 0.01 | 0.03 | -.01 | .02 | .08 | -.06 | .04 |
| Allows chaos, leaves the students to it | 0.13 | 0.24 | -.33** | -.21* | -.23* | .05 | -.44** |
| Uses an illogical and inconsistent structure | 0.02 | 0.08 | -.26** | -.19* | -.15 | .09 | -.25** |
| *Cold* | | | | | | | |
| Does not pay attention to the students | 0.04 | 0.11 | -.03 | .10 | -.12 | .09 | -.06 |
| Is acting unfriendly and cold | 0.03 | 0.13 | -.12 | -.08 | .06 | -.03 | -.19* |
| Keeps distance from the students | 0.03 | 0.12 | -.07 | .12 | -.02 | .26** | -.13 |
| Is distracted | 0.07 | 0.19 | -.02 | .09 | -.11 | .09 | -.02 |
| Is acting inconvenient and annoying | 0.01 | 0.06 | -.13 | -.13 | .12 | -.03 | -.21* |

*Note.* *p < .05, **p < .01.

### 3.3.3 Differences in Motivating Teaching Behaviour between lessons with either high or low student engagement

Overall, there seemed to be quite some differences between lessons regarding the levels of student engagement and motivating teaching (see Figure 3.1).

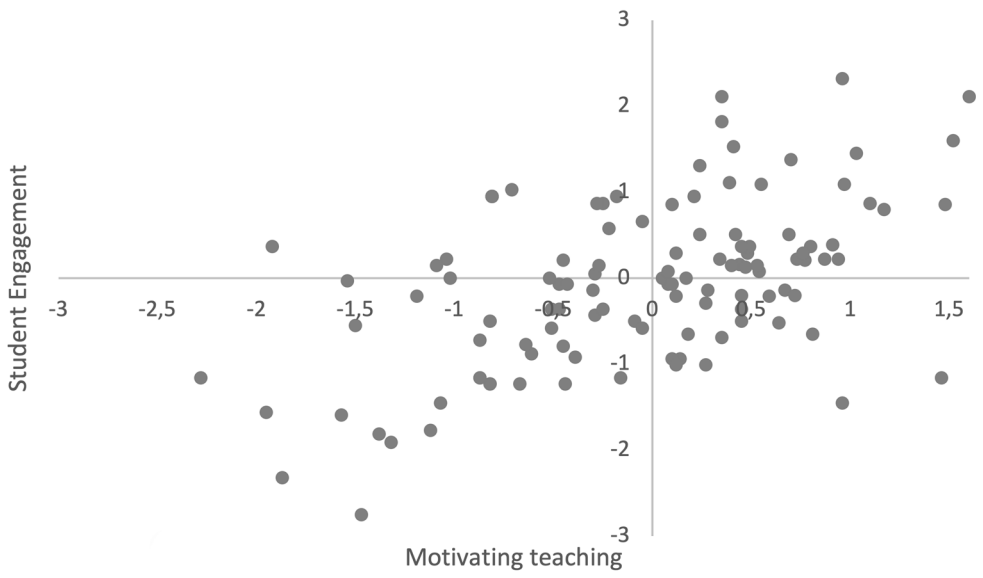


**Figure 3.1.** An overview of z-scores of all recorded lessons on levels of student engagement and motivating teaching behaviours.



Lessons in the upper-right corner are the lessons that have high levels of student engagement and high levels of motivating teaching and in the lower-left corner are the lessons with low student engagement and relatively low levels of motivating teaching. Interestingly, when looking at the lower-right corner there seemed to a number of lessons with low levels of student engagement despite relatively high levels of motivating teaching. In addition, also in contrast with SDT, the left corner above the x-axis shows some lessons with moderate levels of student engagement despite relatively low levels of motivating teaching.

The most engaging lessons were all part of the upper-right quadrant of Figure 3.1. From the 12 most engaging lessons: five lessons included creative subjects (i.e. drama, music and visual arts); four lessons were related to students' future vocation as a care aid or pedagogical worker (i.e. social skills, parenting, aesthetics and project management); and three lessons were on general subjects (i.e. Dutch). Most creative classes were taught in specific classrooms for music or drama lessons, with open space in which to perform; visual arts was usually taught in a large room with work benches or in a traditional classroom in small groups. Most vocational and general subjects were taught in traditional classroom settings, although one Dutch lesson was given in a computer room as students needed to perform assignments on the computer. The highly engaging lessons were recorded in six out of the 14 participating classes so there were a couple of classes that appeared multiple times. The maximum was four recordings with the same class. In total, there were three teachers with two lessons who scored among the most engaging lessons.

All lessons with low levels of student engagement were in the lower-left quadrant of Figure 1. From the 12 least engaging lessons: six subjects were related to students' vocation as a social worker, care aid or pedagogical worker (i.e. project management, first aid, aesthetics, client types and light and sound technique for performances such as children's activities); five lessons had a general subject (i.e. calculus, career and citizenship, English); and one lesson was study counselling. Regarding the subjects of the highly and lowly engaging lessons, there appeared to be some distinct differences. In the highly engaging lessons almost half of the lessons had a creative subject whilst none of the lowly engaging lessons had a creative subject. In addition, regarding the general subjects, lessons in Dutch were found to be among the most engaging lessons whilst lessons in calculus and career and citizenship were among the least engaging lessons.
Almost all lessons were taught in traditional classroom settings except for light and sound technique, which has a specific classroom with all the necessary equipment. The lessons were recorded in eight out of 14 recorded classes and a couple of these classes occurred multiple times within the demotivating lessons. The maximum was three recordings with the same class with two different teachers. Thus, one of these teachers taught two lessons that were scored as lowly engaging.

Overall, with regards to the recorded classes of students, some of the same classes of students were recorded showing a high level of engagement (most engaging lessons) in one class and very low levels in the other (least engaging lessons). Regarding differences in teachers between highly and lowly engaging lessons, five teachers provided multiple lessons within the highly engaging lessons; the same was true with the lowly engaging lesson in which five different teachers taught multiple lessons. Two teachers were observed teaching at both ends of the continuum, thus teaching very contrasting lessons regarding students' engagement.

There were quite some differences in the minimum and maximum levels of the use of (de)motivating teaching behaviours, even within highly or lowly engaging lessons (see Table 3.2). Teachers in the most engaging lessons were observed using higher levels of inviting language (autonomy support), new tips, support, positive feedback, used students as positive role models and addressed students with their first name (structure during activity). Furthermore, teachers in the most engaging lessons showed much higher levels of relatedness support (i.e. teachers' enthusiasm, energy, empathy and attention). In contrast, the least engaging lessons were characterized by more chaotic teaching behaviours (allowing chaos and the use of illogical structure).

**Table 3.2.** Differences in lessons with high levels of student engagement compared to lessons with low student engagement per study variable (means, standard deviations and range)

| | Most engaging lessons | | | Least engaging lessons | | |
|---|---|---|---|---|---|---|
| | M (SD) | Min | Max | M (SD) | Min | Max |
| *Student engagement* | | | | | | |
| Pay attention | 2.71 (.21) | 2.33 | 3.00 | 1.64 (.38) | 0.86 | 2.33 |
| Put in effort | 2.20 (.34) | 1.40 | 2.67 | 0.22 (.33) | 0.00 | 1.00 |
| Ask questions | 1.87 (.55) | 0.63 | 2.44 | 0.58 (.57) | 0.00 | 1.56 |
| Give up easily | 0.02 (.06) | 0.00 | 0.22 | 0.03 (.07) | 0.00 | 0.22 |
| Enjoy the class | 2.46 (.32) | 2.00 | 3.00 | 1.43 (.70) | 0.00 | 2.22 |
| *Autonomy support* | | | | | | |
| Asks for participation in the lesson content | 0.29 (.52) | 0.00 | 1.89 | 0.07 (.18) | 0.00 | 0.56 |
| Offers choice to all students | 0.40 (.51) | 0.00 | 1.89 | 0.16 (.22) | 0.00 | 0.67 |
| Gives the opportunity to experiment | 0.62 (.82) | 0.00 | 2.67 | 0.33 (.47) | 0.00 | 1.33 |
| Uses differentiation | 0.08 (.16) | 0.00 | 0.44 | 0.00 (.00) | 0.00 | 0.00 |
| Uses inviting language | 1.32 (.41) | 0.63 | 2.22 | 0.54 (.51) | 0.00 | 1.67 |
| *Structure before activity* | | | | | | |
| Offers the pupils a rationale | 0.35 (.32) | 0.11 | 1.25 | 0.53 (.54) | 0.00 | 1.78 |
| Gives an overview of the lesson | 0.23 (.17) | 0.00 | 0.50 | 0.28 (.18) | 0.00 | 0.67 |
| Gives clear (verbal) instructions | 0.83 (.49) | 0.22 | 1.63 | 0.82 (.61) | 0.11 | 1.86 |
| Provides variation | 0.08 (.14) | 0.00 | 0.44 | 0.14 (.27) | 0.00 | 0.89 |
| Demonstrates, is a 'model' for the students | 0.10 (.29) | 0.00 | 1.00 | 0.33 (.53) | 0.00 | 1.67 |
| *Structure during activity* | | | | | | |
| Offers students a rationale | 0.41 (.56) | 0.00 | 2.00 | 0.20 (.29) | 0.00 | 0.78 |
| Monitors if students live up to instructions | 0.82 (.65) | 0.11 | 2.44 | 0.47 (.41) | 0.00 | 1.29 |
| Offers students new guidelines, tips and advice | 1.08 (.77) | 0.00 | 2.22 | 0.17 (.29) | 0.00 | 1.00 |
| Provides positive feedback | 0.86 (.50) | 0.33 | 1.89 | 0.19 (.29) | 0.00 | 1.00 |
| Uses students as positive role models | 0.05 (.08) | 0.00 | 0.22 | 0.00 (.00) | 0.00 | 0.00 |
| Offers help during exercises | 1.34 (.89) | 0.00 | 2.56 | 0.13 (.21) | 0.00 | 0.63 |
| Addresses students by their first name | 1.19 (.79) | 0.22 | 2.80 | 0.44 (.54) | 0.00 | 1.89 |
| *Relatedness support* | | | | | | |
| Is physically nearby the pupils | 2.28 (.42) | 1.38 | 2.67 | 1.86 (.50) | 1.17 | 2.78 |
| Is enthusiastic and eager | 2.14 (.37) | 1.67 | 2.89 | 0.93 (.55) | 0.14 | 1.89 |
| Puts effort and energy into the lesson | 2.25 (.32) | 1.78 | 2.78 | 1.43 (.58) | 0.14 | 2.22 |
| Takes the perspective of students, is empathic | 2.47 (.45) | 1.56 | 3.00 | 1.21 (.52) | 0.11 | 2.11 |
| Pays attention to what the students are saying | 2.72 (.30) | 2.22 | 3.00 | 1.67 (.71) | 0.22 | 2.78 |
| *Control* | | | | | | |
| Exercises power over the students | 0.00 (.00) | 0.00 | 0.00 | 0.08 (.17) | 0.00 | 0.57 |
| Commands students, uses controlling language | 0.28 (.30) | 0.00 | 0.89 | 0.30 (.48) | 0.00 | 1.71 |
| Is irritated, loses his patience | 0.01 (.06) | 0.00 | 0.22 | 0.20 (.45) | 0.00 | 1.43 |
| Yells at the students | 0.00 (.00) | 0.00 | 0.00 | 0.00 (.00) | 0.00 | 0.00 |
| Pressures the students by appealing to their self-confidence or induces guilt | 0.03 (.06) | 0.00 | 0.20 | 0.04 (.10) | 0.00 | 0.33 |
| Uses destructive criticism | 0.02 (.06) | 0.00 | 0.20 | 0.01 (.03) | 0.00 | 0.11 |
| Does not allow input from the students | 0.03 (.06) | 0.00 | 0.20 | 0.04 (.07) | 0.00 | 0.22 |
| *Chaos* | | | | | | |
| Loses time with the reorganization of groups, equipment. | 0.03 (.09) | 0.00 | 0.33 | 0.13 (.21) | 0.00 | 0.56 |
| Doesn't know the students' names. | 0.01 (.03) | 0.00 | 0.11 | 0.01 (.03) | 0.00 | 0.11 |

| | Most engaging lessons | | | Least engaging lessons | | |
|---|---|---|---|---|---|---|
| | M (SD) | Min | Max | M (SD) | Min | Max |
| Allows chaos, and leaves the students to it | 0.01 (.04) | 0.00 | 0.13 | 0.39 (.49) | 0.00 | 1.57 |
| Uses an illogical and inconsistent structure | 0.00 (.00) | 0.00 | 0.00 | 0.12 (.18) | 0.00 | 0.56 |
| *Cold* | | | | | | |
| Does not pay much attention to the students | 0.03 (.11) | 0.00 | 0.38 | 0.05 (.13) | 0.00 | 0.44 |
| Is acting unfriendly and cold | 0.04 (.08) | 0.00 | 0.22 | 0.04 (.10) | 0.00 | 0.33 |
| Takes distance from the students | 0.00 (.00) | 0.00 | 0.00 | 0.02 (.06) | 0.00 | 0.22 |
| Is distracted | 0.05 (.09) | 0.00 | 0.25 | 0.02 (.06) | 0.00 | 0.22 |
| Is acting inconvenient and annoying | 0.02 (.06) | 0.00 | 0.20 | 0.02 (.06) | 0.00 | 0.22 |

### 3.3.4. Teachers' use of (de-)motivating teaching during the course of lessons with either high or low student engagement

Regarding the use of motivating teaching behaviours over the course of the lesson, teachers seemed to use giving room to experiment (autonomy support; see Figure 3.2[a]) and offering help during exercises (structure during activity; see Figure 3.2[b]) more after the first two or three intervals of the lessons. While this seemed to be similar in terms of the timing for teachers within the most and least engaging lessons, there was quite a difference in the level in which they used these behaviours. Teachers in most engaging lessons seemed to provide students with more room for experimenting and support during assignments than teachers in the least engaging lessons. For relatedness support (see Figure 3.2 [c]) teachers' enthusiasm did not seem to vary much within lessons, although teachers in engaging lessons seemed to show the highest level of enthusiasm around the second interval of the lesson. Compared to teachers in the most engaging lessons, teachers in the least engaging lessons were observed to be less enthusiastic. In addition, it seemed that teachers in the most engaging lessons became slightly less enthusiastic towards the end of the lessons, whereas teachers in least engaging lessons seemed to be most enthusiastic toward the end of the lesson. The highest levels of verbal instructions were observed at the beginning of the lessons in both types of lessons (structure before activity; see Figure 3.2[d]). Teachers within most engaging lessons seemed to use slightly more verbal instructions than teachers in the least engaging lessons.

For the demotivating teaching behaviours, it seemed as though most of these behaviours were used mostly at the start of the lessons, within the first two intervals. The most observed behaviour was leaving students to it and allowing chaos (chaos; see Figure 3.2[e]). To a lesser extent this was observed with: is irritated, loses patience (control; see Figure 3.2[f,5]) and keeps distance from the students (cold teaching; see Figure 3.2[g,5]). This exploration indicates that although these behaviours had a low occurrence, it was mostly teachers in the least engaging lessons that used them at the start of the lesson.

[5] As the behaviours depicted in Figure 2[e] and 2[g] were observed in a very low frequency, we adjusted the scale of the y-axis figures to be able to show their use within lessons.



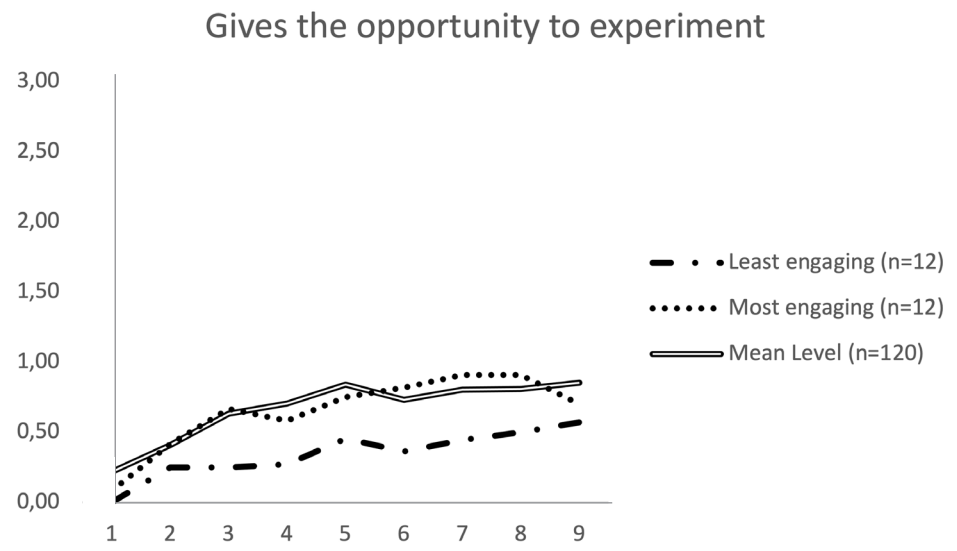


**Figure 3.2[a].** Mean levels of 'gives the opportunity to experiment' (Autonomy support) per five-minute interval of the lesson for the entire sample, most and least engaging lessons.

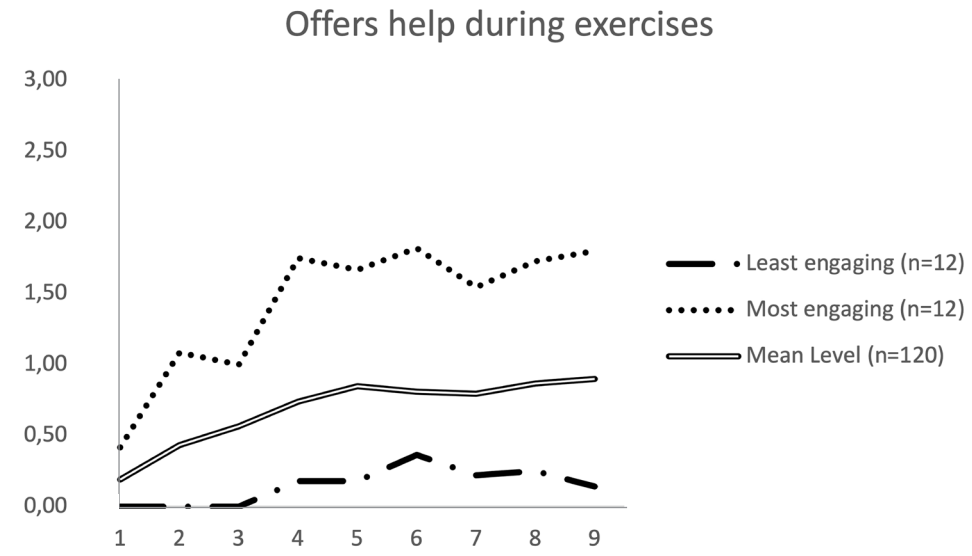


**Figure 3.2[b].** Mean levels of 'offer help during exercises' (Structure during activity) per 5-minute interval of the lesson for the entire sample, most and least engaging lessons.

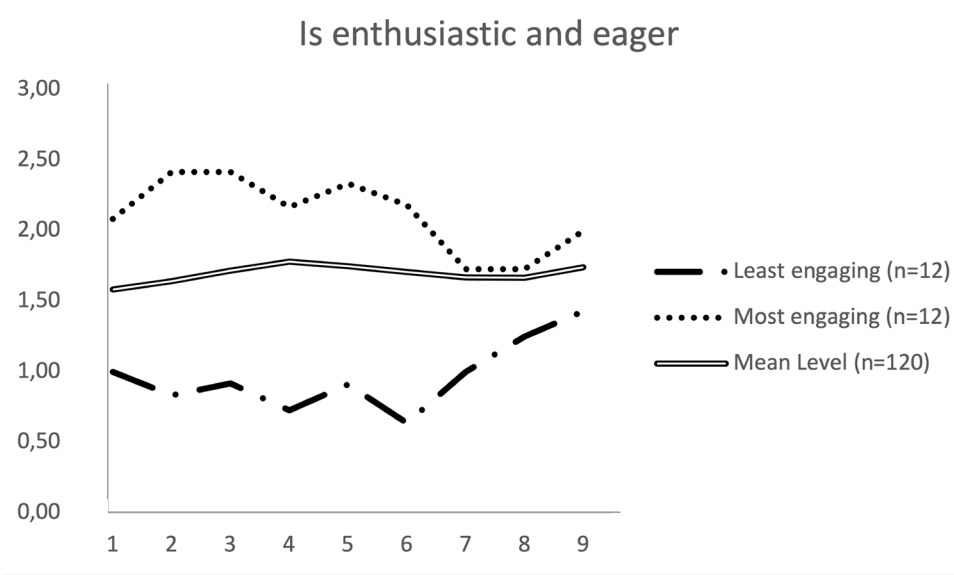


**Figure 3.2[c].** Mean levels of 'is enthusiastic and eager' (Relatedness support) per 5-minute interval of the lesson for the entire sample, most and least engaging lessons.

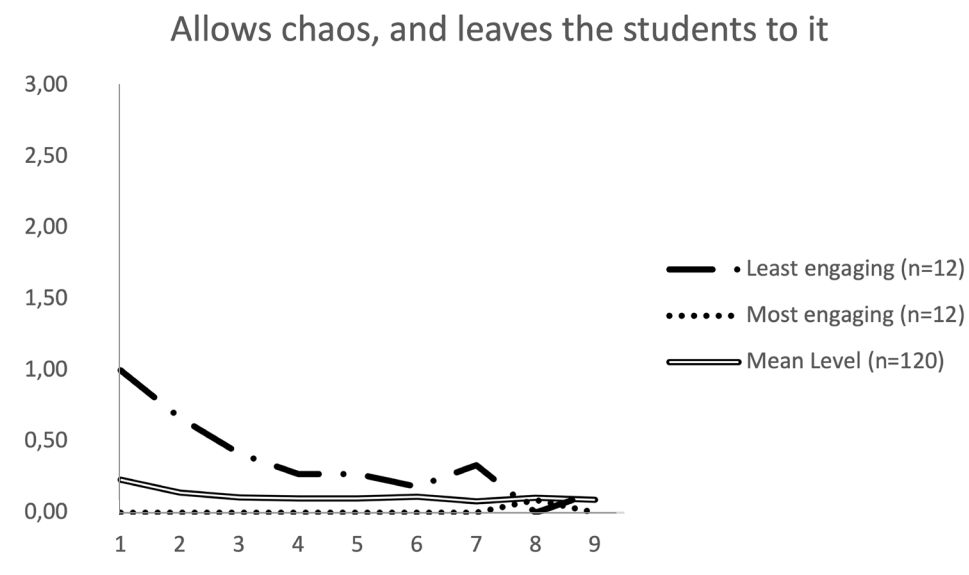


**Figure 3.2[e].** Mean levels of 'allows chaos' (Chaos) per 5-minute interval of the lesson for the entire sample, most and least engaging lessons.

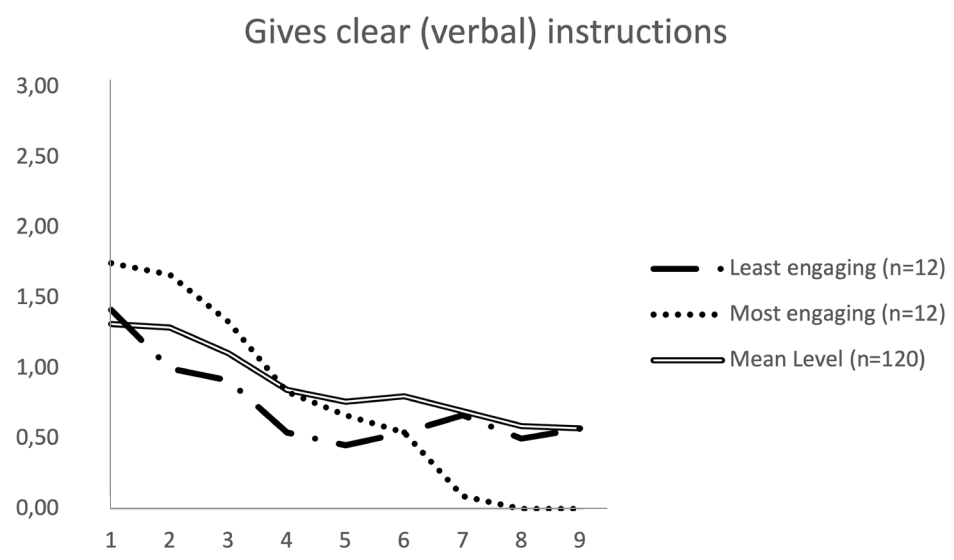


**Figure 3.2[d].** Mean levels of 'giving clear verbal instructions' (Structure before activity) per five-minute interval of the lesson for the entire sample, most and least engaging lessons.

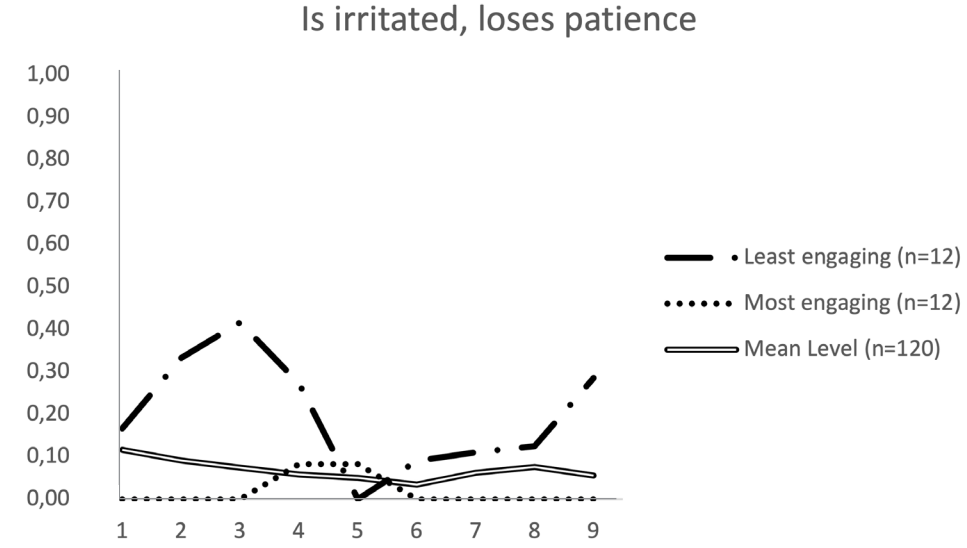


**Figure 3.2[f].** Mean levels of 'is irritated, loses patience' (Control) per 5-minute interval of the lesson for the entire sample, most and least engaging lessons.[5]

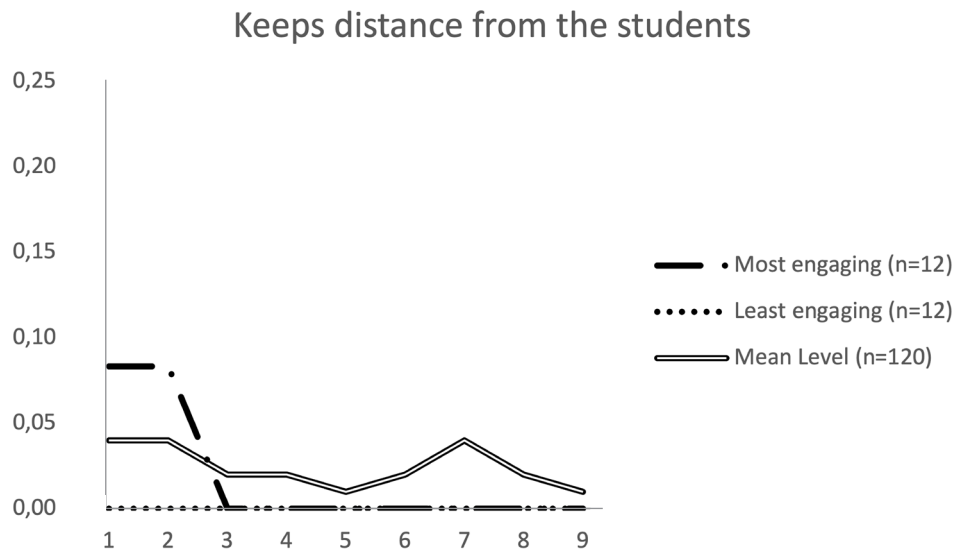


**Figure 3. 2[8].** Mean levels of 'keeps distance from the students (Cold) per 5-minute interval of the lesson for the entire sample, most and least engaging lessons.[5]

## 3.4 | Discussion

Student engagement is a prerequisite for optimal deep-level learning (Barkoukis et al. 2014; Skinner 2016; Skinner et al. 1998) and an important determinant of students' vocational success and future occupational outcomes (Abbott-Chapman et al. 2014). In this study, we used observational data to describe how (de)motivating teaching behaviours were associated with different aspects of student engagement. Additionally, we investigated the use of (de)motivating teaching behaviours in contrasting lessons (the most versus the least engaging lessons).

### 3.4.1 The occurrence of (de)motivating teaching behaviours and student engagement in lessons

Overall, observations showed that specifically the level of active student engagement seemed to lag behind on the emotional and more passive behavioural engagement of students, which could be expected, considering VET-students' motivational challenges (Cents-Boonstra et al. 2018; Vugteveen, et al. 2016). With regards to the use of motivating teaching behaviours, the low occurrence of teaching behaviours related to autonomy support and structure during activity was most striking, while quite high levels of relatedness support were observed.

The low occurrence in autonomy support and guidance is in line with previous research indicating that these types of behaviour were hardly ever put into practice within VET (De Bruijn and Leeman 2011; Jossberger, Brand-Gruwel, Van de Wiel and Boshuizen 2018). While VET-students do not feel equipped to take control of their own learning process (Biemans, Wesselink, Gulikers, Schaafsma, Verstegen, and Mulder 2009; Elffers 2013), VET-teachers see their students struggling with regulating their own learning process (De Bruijn and Leeman 2011). The high levels of teaching behaviour related to relatedness support, however, may indicate that teachers tend to 'take over' and provide students with more empathy and enthusiasm, instead of guidance (De Bruijn and Leeman 2011; Heusdens 2018). This may indicate that there might be an imbalance between guiding students' learning activities and relatedness support, causing students to become more passive rather than being challenged to actively take charge of their own learning.

### 3.4.2 Associations between (de)motivating teaching behaviours and indicators of student engagement

Within the results of our study, quite distinct differences were found in the specific teaching behaviours fostering either more passive or active student engagement. For example, inviting language and giving students a say in the lesson content (autonomy support) and relatedness support seemed important in fostering more passive student engagement, which refers to students' attention and enjoyment. On the other hand, participative and guiding behaviours (Aelterman et al. 2019) such as offering choice and help with exercises seemed more important for fostering active student engagement, which refers to students asking questions and their effort.

Furthermore, different demotivating teaching behaviours were found to be negatively related to student engagement. Teachers' control and chaotic teaching were negatively associated with more passive student engagement and to a lesser extent also with students' effort. Whereas asking questions was negatively associated with chaos. These findings are in line with earlier findings of De Meyer et al. (2014) and Van den Berghe et al. (2013) who found that demotivating teaching behaviours are particularly harmful for students, despite their low occurrence, as one negative experience can have a more severe impact than a positive experience. The results showed this was particularly true for destructive criticism, which was positively associated with students giving up.

### 3.4.3 Differences in Motivating Teaching Behaviour between lessons with either high or low student engagement

With regards to differences between contrasting lessons, results showed that teachers in the highly engaging lessons used more inviting language (autonomy support), positive feedback, help during exercises (guidance during learning activities), more empathy and attention for their students and put more effort and enthusiasm into their lessons (relatedness support). In contrast, teachers in the least engaging lessons were observed to allow more chaos.

The way teachers in engaging lessons employ motivating teaching behaviours corresponds with a more constructivist, student-centred approach (Adams 2006; Wikinson, Treagust, Legatt and Glasson 2006) to learning. This approach is in line with the SDT, given the focus on self-determined learning of the students. A student-centred perspective on learning encompasses methods of teaching that shift the focus of instruction from the teacher towards the active learning of the student (Stroet, Opdenakker and Minneart 2015b). The differences in the use of motivating teaching behaviours seem

to resemble the findings of Stroet et al. (2015b) when comparing constructivist and traditional classrooms. In line with the constructivist classrooms (Stroet et al. 2015b), teachers in the highly engaging lessons (present study) used more individual guidance to support students' activities and provided structure so students could guide their own learning process. In contrast, comparable to teachers in traditional classrooms, teachers in the present study in the lowly engaging classes showed relatively low levels of guidance during learning activities.

In addition, as expected, there were quite a number of differences in levels of engagement and (de)motivating teaching from lesson to lesson (e.g. Hornstra et al. 2018; Krijgsman et al. 2019; Van den Berghe et al. 2013). Contrary to what one would expect, lessons with the highest levels of student engagement did not necessarily equal the highest levels of motivating teaching behaviours. Nor were lowly engaging lessons also the ones with the absolute lowest levels of motivating behaviour. This may be partly explained by the lesson subjects. Five out of the 12 highly engaging lessons had a creative subject. For lessons with a vocational or general subject this seemed to vary, as they were among the most and the least engaging lessons. Teachers may engage students quite easily when they teach a subject in which students have a great interest (Reeve 2016). Yet, teachers of subjects that most students dislike. such as general subjects, may need more motivating interventions to foster students to engaged themselves within the lesson (Jang 2008; Reeve 2016).

In addition to variation in students' interest in the lesson subject, it would be very interesting to investigate which other situational or contextual factors influence the use of (de)motivating teaching behaviours. These could be factors such as teachers' heavy workloads, feeling pressured (Pelletier et al. 2002; Pelletier and Sharp 2009) and/or negative perceptions of students' abilities or motivation (Hornstra et al. 2015). Studying how these factors influence teachers' use of motivating behaviours within lessons could create more awareness of the influence of these factors on student engagement among teachers.

### 3.4.4 Teachers use of (de-)motivating teaching during the course of lessons with either high or low student engagement

Within the course of the lessons, there seemed to be quite distinct differences in the start of lessons with either high or low levels of student engagement. Teachers in lessons with high levels of engagement were observed to start the lessons with higher levels of enthusiasm. In contrast, teachers in lessons with low levels of engagement were observed to start their lessons with higher levels of irritation, allowing chaos and distance from students. These differences might support the argument made by Van den Berghe et al. (2016). In their study, they discussed that the start of the lesson is often more centred around the teacher providing instructions and maintaining classroom management, making teachers less inclined to react in a motivating way.

In general, teachers in the highly engaging lessons seemed to offer less structure at the start of the lesson, for example in the sense of verbal instructions and rationales and more information while the students were most actively working on assignments. Slightly contradictory to Reeve (2016) it seemed more important to provide help or a rationale while students were working rather than before students' activities in the lesson,



considering the negative association with the students' engagement. It could be that for VET-students it is more beneficial to learn while working (Heusdens 2018).

Towards the end of the lesson, particularly teachers in the lowly engaging lessons seemed to become more irritated, provide more verbal instructions again and reach their highest level of room for experimenting. Yet these teachers also reached the highest levels of enthusiasm at the end of the lesson. This may indicate that they are quite eager and rush to bring the learning activities to a quick close, making them more enthusiastic as the lesson is almost finished but also irritated if last-minute demands stand in the way of ending the lesson (Reeve 2016). The observed differences in the use of certain (de)motivating teaching behaviours between the highly and lowly engaging lessons seemed to further support the argument that timing, namely providing the right kind of motivating teaching behaviour at the right time, is of importance for fostering students' positive engagement (Reeve 2016).

### 3.4.5 Limitations and Directions for Future Research

This study has some limitations that need to be considered. Given the explorative and descriptive nature of our study, we were not in the position to draw conclusions about causal relationships or to statistically test the relations between (de)motivating teaching behaviours and student engagement. Students' and teachers' behaviours were rated at the same time and our analyses did not enable us to disentangle whether it is the teaching behaviour that triggers students' engagement or the other way around. Recent research (Jang et al. 2016; Matos et al. 2018) suggests that it is a reciprocal relationship: more (specifically more active) student engagement leads to more motivating teaching behaviour and vice versa. Clearly, more in-depth sequential studies are needed to further understand the relation between teaching behaviour and student engagement. In addition, multilevel analyses could further test the described relations between motivating teaching behaviours and different aspects of student engagement. Due to the complexity of our nested data and our descriptive research aim this was not the focus of the current study. Thus, future research with a more systematic and controlled data collection approach could complement our findings with multilevel analyses.

In addition, rating (de)motivating teaching behaviour from zero to three to indicate whether behaviour is occurring almost never or all the time gives a broad indication of the actual behaviour the teacher was using. The explored differences in the use of behaviours across the most and least engaging lessons seemed to be quite logical per stage of the lesson. At the beginning of a lesson teachers tended to use more structure before the activity (such as providing an overview, Haerens et al. 2013) followed by structure during the activity as students started to work on exercises, while behaviours of relatedness support were observed to be more stable across the lesson. Aggregating the means for these behaviours over the entire lesson might falsely suggest they do not occur often, whilst it would probably be counterproductive if a teacher were to provide students with an overview of the lesson every five minutes. Thus, for several motivating teaching behaviours it would not be expected that they ever reach the maximum score of the scale for every interval, because they are not logically applied in every part of the lesson. Therefore, it would be interesting for future research to investigate (de)

motivating teaching behaviour and its association with student engagement from a microlevel perspective instead of using aggregated scales of a variety of teaching behaviour across the entire lesson. Hereby, it could be recommended to decide on the time intervals per lessons depending on the activity of the teacher or students. This could create an even better understanding of the use of motivating teaching behaviour during different parts or activities within lessons: the start of a lesson (which could be five minutes in one lesson and 15 in another); instruction; exercises or small group work; and at the end of a lesson.

Furthermore, student engagement was operationalized as collective student engagement. In this study, however, we did not measure which situational and contextual factors of students influence students' engagement, nor the differences in individual engagement among students in one class. For future research, it would be very interesting to investigate why – and which – students show more engagement in one lesson than in another. This may include, for example, students' interest, their perception of teachers' motivating behaviours, feelings of stress or their motivation for completing their track.

In addition, observing student engagement with five items, showed some differences in results among the three different aspects of student engagement. In order to further contribute to the understanding of student engagement as a multidimensional concept, it would be beneficial to expand the research to include more indicators of student engagement. Specifically, active and agentic engagement (Reeve and Tseng 2011) need to be further investigated including different indicators, such as student constructive contributions in lessons, complementing the teachers or showing initiative.

**3.4.6 Practical Implications**

Given the relatively low levels of students' active engagement, it seems important for teachers to explore ways to actively engage students in lessons (Nguyen et al. 2018). Students' positive engagement is fostered with the right timing of the use of (de)motivating teaching behaviours (Nicholson and Putwain 2016). More specifically, these teaching behaviours should include using high levels of relatedness support from the start of the lessons (teachers' enthusiasm, energy, empathy and attention). Teachers need to engage students early on in the lesson with learning activities and room for experimenting, while observing the students with patience and providing guidance with positive feedback, rationales and support during exercises. SDT offers concrete recommendations on which behaviours are more effective in which part of the lessons (Reeve 2016). In order to further foster especially students' active engagement, teachers would need to reflect upon their approach towards teaching and the use of these behaviours within the course of their lessons.

A very suitable tool to promote these reflections among teachers may be the recordings of the lessons. Watching back to their own lessons could create awareness among teachers about their own concrete behaviours, allows them to reflect on what they think they do and what they are doing, how their behaviours affects their students' behaviour and help them to specify concrete possibilities to foster more active student engagement (Pennings, Van Tartwijk, Wubbels, Claessens, Van der Want and Brekelmans 2014). Reflections based on classroom observations could be further strengthened by involving some kind of supervision, like a coach (Brophy & Good). Another promising avenue might be peer learning in which teachers from different subjects observe each other's lessons to get inspired and exchange promising ways to further engage their students.

In addition, several intervention studies have demonstrated that teachers can be trained to adopt these motivating strategies to the benefit of students' engagement and motivation (Su and Reeve 2011). Within our study there appeared to be quite some differences in the use of motivating teaching behaviours from lesson to lesson. It might therefore be beneficial to acknowledge these fluctuations and teachers could reflect on what causes them to vary in their behaviour as part of the intervention (Hornstra, Weijers, Van der Veen and Peetsma, 2016) to create more awareness (Pennings, Van Tartwijk, Wubbels, Claessens, Van der Want and Brekelmans 2014) on how they personally engage their students.

Besides interventions on individual teachers, providing interventions for a team of teachers or peer learning could prove to be a beneficial addition to existing interventions. As teachers in VET work need to work as a team to foster students' positive engagement for their particular track, cooperation and peer learning between teachers providing different types of lessons (vocational, general, creative and counsellors) is a necessity in creating powerful learning environments (De Bruijn and Leeman 2011).

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# CHAPTER 4

## Patterns of Motivating Teaching Behaviour and Student Engagement: A Microanalytic Approach

**Based on:**
Cents-Boonstra, M., Lichtwarck-Aschoff, A., Mascareno Lara, M., & Denessen, E. *(in press).* Patterns of Motivating Teaching Behaviour and Student Engagement: A Microanalytic Approach. *European Journal of Psychology of Education.*

# Abstract

Positive student engagement is a prerequisite for students' educational success. In this study, a microanalytic approach was used to explore patterns in teachers' use of specific motivating teaching behaviours from the perspective of self-determination theory in relation to indicators of students' positive engagement. Lessons of 52 teachers were observed and event-based coded. Results showed that specifically asking motivating questions and providing positive feedback and support during exercises was associated with subsequent positive student engagement. Unexpectedly, some demotivating teaching behaviours were also found to relate to positive student engagement, although to a lesser extent. Implications and directions for future research are discussed.




Students' positive engagement in classrooms is an important prerequisite for students' educational success (Abbott-Chapman et al., 2014; Archambault, Janosz, Fallu, & Pagani, 2009; Rumberger & Lim, 2008; Wang & Fredricks, 2014). When students are engaged, they show more attention and task-related behaviour and are less distracted from their work, with positive outcomes, such as higher levels of deep-level learning, skill development, and academic achievement, as a result (Barkoukis, Taylor, Chanal, & Ntoumanis, 2014; Reeve, 2012; Reeve & Tseng, 2011; Skinner, 2016; Skinner, Zimmer-Gembeck, & Connell, 1998). Yet, there is strong variability in the way students engage in their own learning process, varying from enthusiastically participating and asking questions to gazing out the window (disengagement) or actively disrupting lessons (Cooper, 2014).

Self-determination theory (SDT; Ryan & Deci, 2000) posits that certain teaching behaviours are related to students' engagement (Reeve, 2012; Reeve et al., 2004) and that this relation is indirect, i.e., via students' motivation (Ryan & Deci, 2016; Niemiec & Ryan, 2009; Soenens, Sierens, Vansteenkiste, Dochy, & Goossens, 2010). More concretely, the theory postulates a relation between teaching behaviours and the quality of students' motivation. Some teaching behaviours – motivating teaching – are thought to foster autonomous and intrinsic forms of motivations, whereas others – demotivating teaching – are thought to promote more extrinsic and controlled forms of motivations (De Meyer et al., 2014; Hearens et al. 2015; Van den Berghe et al., 2013). The idea is then that these underlying motives, which remain hidden to the observer's eye, will translate into observable manifestations in the form of students' engagement in class (Reeve, 2012; Jang, Reeve, Ryan and Kim (2009); Walker, Greene and Mansell (2006) but also Skinner & Belmont, 1993).

The literature on SDT has operationalized motivating teaching in at least two ways. Typically, studies would address motivating behaviour as a teaching style, that is, as a relatively stable, trait-like factor. These studies (Jang, Kim, & Reeve, 2012; Jang, Reeve & Deci, 2010; Reeve et al., 2004; Van den Berghe et al., 2016) have demonstrated that motivating teaching style, applied in the classroom, indeed fosters students' interest, participation and involvement. In particular, teachers can increase their students' engagement by establishing an overall motivating classroom climate (Assor, Kaplan, & Roth, 2002) and through adopting a motivating teaching style (Aelterman et al., 2014; Soenens, Vansteenkiste, Sierens, Goossens, & Dochy, 2012; Van den Berghe et al., 2013).

However, recent SDT research suggests that motivating teaching is situation-dependent, and dynamically manifested in moment-to-moment teaching behaviours (Aelterman et al., 2019; Domen et al., 2019; Krijgsman et al., 2019). In the current study, a microanalytic approach was applied to extend previous SDT-related work, and to offer new insights into the dynamics of motivating teaching behaviours and students' engagement within everyday classroom interactions. Specifically, the aim was to explore patterns of teachers' use of motivating and demotivating teaching behaviour in relation to specific indicators of students' engagement.

### 4.1.1 Student Engagement

Student engagement is a multidimensional concept that includes behavioural, cognitive, and emotional attributes associated with being deeply involved in an activity

(Skinner, 2016; Wigfield et al., 2015). Researchers have operationalised student engagement in many different ways. Two important characteristics of student engagement, however, are discussed in the majority of the research.

Firstly, not all states of student engagement are associated with positive student outcomes. Therefore, it is important to distinguish between students' positive and negative states of engagement (Skinner, 2016). Students' positive engagement (such as paying attention, asking questions, supplementing the teacher without any prompt, or taking initiative) is considered an important prerequisite for students' success at school and beyond (Abbott-Chapman et al., 2014; Archambault, Janosz, Fallu, & Pagani, 2009; Rumberger & Lim, 2008; Wang & Fredricks, 2014). In contrast, negative engagement such as being distracted, expressing boredom, disobeying rules, or complaining can seriously jeopardise this success (Connell, Halpern-Felsher, Clifford, Crichlow, & Usinger, 1994; Connell, Spencer, & Aber, 1995; Henry, Knight, & Thornberry, 2012; Janosz, Archembault, Morizot, & Pagani, 2008; Li & Lerner, 2011; Skinner, Wellborn, & Connell, 1990).

Secondly, with regards to student engagement within the classroom, visible and invisible aspects can be distinguished, related to the way in which engagement is measured. In the bulk of the relevant literature, student engagement is measured with self-reports that allow measuring students' cognitive perception of their own involvement. In other words, they inform us about how they assess their engagement in class (behaviourally, cognitively and/or emotionally; Van Uden, Pieters, & Ritzen, 2014). Yet, observational research allows investigating the more visible aspects of students' actual behaviour, as relates to engagement in the classroom (Jang et al., 2010; Reeve et al., 2004; Van den Berghe, Cardon, Tallir, Kirk, & Haerens, 2016).

Initially, SDT-related work was predominantly focused on aspects of student engagement (Lawson & Lawson, 2013) that can be frequently observed in classrooms, e.g., students reacting to triggers and stimuli of their teachers (passive, compliant behaviours indicating student engagement). Recently, however, there is increased interest in a more action-oriented definition of engagement (Appleton, Christenson, & Furlong, 2008), which describes students as active agents of their own learning process. This form of engagement has also been called agentic engagement (Reeve, 2013; Reeve & Tseng, 2011) and contributes to a self-determined learning process (Jang, Reeve & Halusic, 2016; Reeve, 2012; Ryan & Deci, 2000, 2016).

Within current research on SDT, students' engagement is typically measured from a rather broad perspective, aggregating various indicators of student engagement across the span of a full lesson (rather than looking at the occurrence of students' specific behaviours within small segments thereof). Although students' perception of their engagement in general could be rather stable, findings of Shernoff et al. (2016) indicate that individual students reported significant variation in their engagement from one instructional episode to the next. This suggests that student engagement is also situationally dependent and related to various contextual factors (e.g., their learning environment and the support they receive from their teachers; see also Hornstra, Stroet, Van Eijden, Goudsblom, & Roskam, 2015).



**4.1.2 Teachers' Use of Motivating Behaviours to Foster Student Engagement**

SDT suggests that teachers can support their students by satisfying their basic needs: autonomy (the freedom to be yourself, to be in charge of your own learning process), competence (the feeling to be competent in completing what is asked) and relatedness (the need to experience closeness with one's teachers and peers; Ryan & Deci, 2000). Regarding teachers' behaviours in practice, researchers in the field (e.g., Aelterman et al., 2019; Haerens, Vansteenkiste, & De Meester, 2018; Vansteenkiste et al., 2012) often draw a distinction between *motivating* teaching behaviours (that support students' basic needs) and *demotivating* teaching behaviours (that have been found to thwart the fulfilment of students' basic needs).

"Motivating teaching behaviours consist of (combinations of) autonomy support, a structure to enhance students' feelings of competence, and relatedness support (Aelterman et al., 2019; De Meester, 2018; Haerens, Vansteenkiste, & De Meester, 2018; Vansteenkiste et al., 2012). Teachers can offer autonomy support within lessons by addressing students' interest or opinions by asking questions or by offering choices or encouraging their students' independent problem solving (Haerens et al. 2013; an den Berghe et al., 2013). Within lessons teachers can provide structure by providing their students with support during assignments and positive constructive feedback (Aelterman et al., 2019; Haerens et al., 2013; Jang et al., 2010; Mouratidis, Vansteenkiste, Sideridis, & Lens, 2011; Niemiec & Ryan, 2009). Regarding relatedness support within lessons, teachers can provide warmth and unconditional regard to develop mutually positive relationships with their students (Connell and Wellborn 1991).

Demotivating teaching behaviours, in contrast, neglect the basic needs of students and consist of (combinations of) controlling, chaotic or 'cold' teaching. Teachers can exercise control, pressuring students by asking controlling or interrogative questions, or referring to tests or by telling students exactly what to do. Inside the classroom students can experience a sense of inferiority or failure when teachers frustrate their need for competence by being disorganised or providing negative feedback (De Meyer et al., 2014; Van den Berghe et al., 2013, 2016)."

Traditionally, SDT research has described teachers' use of motivating teaching behaviour from the perspective of establishing a warm and caring environment (Assor et al., 2002) and applying a motivating teaching style. There are multiple studies describing a variety of aspects and behaviours related to a motivating teaching style (e.g., Aelterman et al., 2014; Assor et al., 2002; Jang, Kim & Reeve, 2016; Niemiec & Ryan 2009; Reeve & Halusic 2009; Reeve, 2016). Within these studies, a distinction is made between teachers with a motivating teaching style who predominantly use motivating teaching behaviours during their lessons and teachers with a more demotivating teaching style who prefer to use more authorative teaching behaviours (De Meyer et al., 2014). Describing teachers as having either a motivating or demotivating teaching style, implies that teachers are rather consistent in their use of either motivating or demotivating behaviours as a means of engaging students. This suggests that teaching behaviours are relatively stable teacher-traits.

Recently, there has been shift from this trait-like perspective on teaching styles to a more fine-grained approach that suggests teachers alternate between motivating and demotivating behaviours between lessons – and even, within the course of a single lesson (Aelterman et al., 2019; Amoura, Berjot, Caruana, Cohen, Gillet, & Finez, 2015; Krijgsman et al., 2019). Research has shown that, indeed, teachers apply different (de)motivating teaching behaviours, depending on (1) the stage of a lesson (Cents, Lichtwarck-Aschoff, Dennessen, Aelterman & Haerens, 2020; Haerens et al., 2013; Van de Berghe et al., 2015); (2) their perception of the differences in students' needs and motivation (Domen et al., 2019; Hornstra et al., 2015); and (3) the educational context (Assor et al., 2002). Assor and colleagues (2002), in addition, showed that the effectiveness of motivating behaviours varied across lessons. None of the observed motivating teaching behaviours could be indicated as consistently most effective in fostering students' engagement; rather, the utility of any specific behaviour was determined by its relevance within a given context. These studies thus suggest that teachers' use of motivating teaching behaviours is not only a trait-like entity but, can also vary from moment to moment, depending on the immediate situational factors.

#### 4.1.3 Present study: A Situational Perspective (Microanalytic Approach)

"The aim of the current study was to contribute to the existing body of SDT related research on the interplay of (de)motivating teaching behaviour and students' engagement, and how it unfolds within real-time interactions between students and teachers. More specifically, we wanted to explore the situated nature of teacher and student behaviours within and across lessons. For this purpose, we employed an observational methodology design, which allows us to get insight into real-time manifestations of teacher and student behaviours, and how these micro interactions unfold from moment to moment. Our situational perspective and microanalytical approach, thus allowed us to gain a more fine-grained understanding of teacher-student interactions (see for applications outside the field of SDT: Mainhard, Pennings, Wubbels, & Brekelmans, 2012; Mascareño Lara, Snow, Deunk & Bosker 2016; Pennings et al., 2014)."

A microanalytic approach entails the detailed analysis of social interactions, using recorded data, to 'dissect' and thereby elucidate (Bull, 2019). Key features of this approach are that global concepts (such as demotivating teaching or student engagement) can be studied through microanalysis of specific behaviours. When teachers are interacting with students, there are many things happening at the same time – not all of which are relevant in terms of motivating teaching and students' engagement (Magnusson, 2000). Yet, considering there is a relationship between motivating teaching and students' engagement, this would imply that – within their interactions – teachers and students display a recurrent structure of these behaviours during lessons. Identifying these iterative sequences (patterns), in relation to positive student engagement, could inform and extend recent investigations considering teaching behaviours and their association with student engagement.

In the current study, we employed two complementary micro-analytic approaches to investigate the patterns of teacher student interactions: lag sequential analysis (Bakeman & Quera, 2011) and T-pattern analysis (Casarrubea et al., 2015, 2018, Magnusson, 2000; Mascareño Lara, Snow, Deunk & Bosker 2016). Both analyses require a focus on event coding, as opposed to traditional observational SDT research that relies on general interval ratings to study more stable, trait-like factors such as atmosphere and style. With our approach, every relevant behaviour of the teacher or students is coded at the exact moment it occurs, which results in a dataset where the temporal character of interaction is preserved. This way of coding allows the examination of patterns in the occurrence and variation of specific teacher and student behaviours. We use the term *pattern* in a general way, to refer to series of teacher and student behaviours that occur repeatedly (i.e., hold a statistical association) in the interaction we studied. The patterns stemming from lag sequential analysis correspond to series of consecutive teacher-student behaviours that were more likely than others to occur in the data. T-pattern analysis, on the other hand, was used to detect sequences of motivating teaching behaviours and students' engagement that did not necessarily follow each other consecutively in the data stream (Magnusson, 2000). With these different but complementary pattern detection techniques, we aimed at unveiling the temporal structure of teacher-student interactions.

To our knowledge this is the first study in the field of SDT that investigates teacher student interaction patterns from a micro-analytical perspective. Our goal was therefore to explore patterns comprising motivating and demotivating teaching behaviours on the one hand, and students' positive and negative engagement on the other hand, both within and across lessons. Based on earlier SDT research we would expect patterns in which motivating teaching is related to positive student engagement. If a teacher for example asks autonomy-supportive questions this should more often be followed by students' positive engagement expressed for instance by asking questions based on sheer interest. Demotivating teaching (e.g. asking controlling questions), on the other hand, should more often be followed by negative student engagement, as reflected in students complaining, for instance. Besides these rather broad hypotheses no specific hypotheses were formulated given the explorative nature of the study.

## 4.2 | Method

#### 4.2.1 Observed Lessons

All lessons were videotaped within one Vocational Education and Training (VET) college, whose board sought to explore effective ways to foster students' engagement during lessons. After discussing the nature and purpose of this study, managers of the VET tracks for Basic Care & Welfare (Level 2),[6] Social Cultural Work and Pedagogical Work (Level 4) decided to participate in the investigation. In total, video-taped lessons of 52 teachers were analysed preparing their first-year students (ages 15 to 27, with an average of 17.8 years; *SD* = 1.78). Of these teachers, 75% (*n* = 39) were female; their age ranged from 23 to 64 years (*M* = 42.58; *SD* = 11.52). Teaching experience within VET ranged from 0 to 35 years (*M* =8.28; *SD* = 6.92). In order to prepare students for these

[6] Vocational education in The Netherlands is divided into four levels. For example, within a specific track, these levels correspond to:

1. Assistant employee (Care aide)
2. Employee (Supporting in care and welfare)
3. Independent employee (Practical Nurse)
1. Specialized professional (Nurse)

professions, a wide variety of subjects are offered within these tracks, including general subjects (e.g., Dutch, Mathematics), creative subjects (e.g., Drama, Music), vocational subjects (e.g., Developmental Psychology, Pedagogics, Reporting, Planning or Conducting Activities for Children), and Counselling.

**4.2.2 Procedure**

Prior to data collection, all teachers were asked to provide informed consent to participate in the study. Participants were assured that their data would be handled anonymously and that they had the right to withdraw permission at any time. Before the start of the lesson recordings, two teachers withheld their consent due to personal circumstances. All students taught by the participating teachers were informed of the research and could indicate if they did not want to take part in this study. Parents of students under the age of 18 received the same information. No student or parent withheld consent for participation.[7]

From the teachers' schedules, the lessons taught to first-year students (in consultation with the teachers) were selected. The scheduled lesson duration was 45 minutes. However, some lessons were shorter than scheduled; the shortest lesson recorded lasted 25 minutes.

**4.2.3 Coding (De)motivating Teaching Behaviour and Student Engagement**

"A microanalytic approach requires a coding scheme suitable for coding behaviours at the exact moment they occur (i.e., event coding). Because of the novelty of our study such a coding system was not available and we had to create our own. We did so, based on existing SDT-related coding schemes (Aelterman et al., 2014; Haerens et al., 2013; Van den Berghe et al., 2013; Van den Berghe et al., 2016) and the SDT literature (e.g., Niemiec & Ryan, 2009; Reeve & Jang, 2006; Reeve & Halusic, 2009). The existing coding scheme of Haerens et al., (2013) and van den Berghe et al. (2013), based on interval coding was transformed into an event-coding scheme to code specific-teacher behaviours. The adjustments were as follows.

First, relatedness support is typically expressed by teachers creating a warm and welcoming atmosphere. In interval coding this usually comes down to items such as 'is enthusiastic' or 'puts energy in the lesson' (Aelterman et al., 2014; Haerens et al., 2013; Van den Berghe et al., 2013), behaviours that cannot be easily coded on an event basis. Therefore, relatedness support as such was not included in the current event-coding scheme.

Second, items pertaining to autonomy support and structure from the coding scheme of Haerens et al., (2013) and van den Berghe et al. (2013) were considered suitable for event-based coding and translated to event-codes. Based on earlier work we know that concrete utterances of teachers often represent a mix of dimensions (Aelterman et al., 2019) and cannot be exclusively assigned to one underlying dimension, such as autonomy support. Questions for instance can be asked in an autonomy supportive way or in a controlling way. Also, feedback can be provided in a positive (i.e., autonomy supportive), or negative (i.e., controlling) manner. Thus, rather than dividing teaching behaviours into strictly separable dimensions based on autonomy support versus control and structure versus chaos, our event-coded behaviours represent mixtures of these dimensions with the overall distinction of motivating and demotivating teaching behaviour (see Table 4.1).

Last, if no counterpart was available to any given behaviour in the existing coding schemes we added those behaviours. For instance, providing positive feedback was included in the original coding scheme of (Haerens et al., 2013; Van den Berghe et al., 2013) under motivating teaching behaviours so we added negative feedback as a demotivating teaching behaviour. An overview of the complete coding scheme can be found in Table 4.1, in which we provide examples of the coded behaviours for each of the codes.

**Motivating Teaching Behaviour.** Regarding SDT-related motivating teaching behaviour (i.e., autonomy support and/or structure), seven types of such behaviours were included. The coded items for motivating teaching were: 'provides choice', 'encourages independent thinking', "asking autonomy supportive questions, 'provides a rationale', 'offers student autonomy supportive help during exercises', 'provides (non) verbal positive feedback' and 'calls to account (motivating).'

**Demotivating Teaching Behaviour.** Regarding SDT-related demotivating teaching behaviour (i.e., control and/or chaos), six such behaviours were included. The six coded behaviours were: 'providing one-dimensional instruction for students' (an instruction that does not invite students to ask further questions, to reflect or contribute), 'Asks controlling questions' 'Refers to the test', 'provides controlling support during exercises' 'call to account (demotivating)' and 'providing negative feedback'.

**Positive Engagement.** With regard to positive student engagement, the following three behaviours were included: 'students ask questions from interest', 'students take initiative', and 'students supplement the teacher without any incentive'.

**Negative Engagement.** Regarding students' negative engagement, three specific student behaviours were included: 'students ask questions about what they must do', 'students complain to the teacher', and 'students do not keep appointments'.

**4.2.4. Coding Procedure**

The coding team included a theoretical expert, a coding coordinator and two research master students. All videos were coded in The Observer XT (Noldus Information Technology, 2011). After three training sessions, with a total of 14 hours of training per coder (with specific feedback on coded test videos), the reliability was considered sufficient ($K$ =.68, which is moderate to good; Landis & Koch, 1977) to start coding all lessons. During the coding, the coding coordinator monitored all completed files of the coded videos to check interrater reliability and avoid coder drift; any found inconsistencies were discussed throughout the coding process.

[7] The research proposal was approved by the Ethics Committee of the Faculty of Social Sciences [omitted in anonymous version] (ECSW2015-1901-285) before the start of the data collection.

The coding coordinator randomly divided the recorded lessons among the four coders. To compute the interrater reliability, five videos (10% of the available videos) were double coded. The double coding was done using the following procedure: the second coder received a list with the time points that a randomly-assigned first coder had coded for specific behaviours. They then were asked to code the behaviours they observed at those specific times. This was done because the main interest concerning interrater agreement was in terms of the content of the behaviours (as opposed to their exact timing). Interrater reliability was (*K* =. 69), which is considered sufficient for further analysis (Landis & Koch, 1977).

**Table 4.1.** Coding Scheme with Examples, Frequencies, Minimum and Maximum of the Observed Behaviours within Lessons and Unique Occurrence in Number of Lessons

| Actor | Value | Behaviour | Coded example | Frequency | Minimum per lesson | Maximum per lesson | Observed in unique lessons (n) |
|---|---|---|---|---|---|---|---|
| Teacher | Motivating (*n* = 3335) | Provides choice | 'Guys, you can take a short break if you want.'<br>'You can go on the computers here or in the study centre.'<br>'We will first make groups and then as a group you will choose one of those cases.' | 56 | 1 | 8 | 24 |
| | | Provides a rationale | 'It must be on paper, if you have only discussed it with each other then you have to retrieve everything from memory completely, while if you have worked it out on paper you only have to read it.'<br><br>'I found this case more special, as this will challenge you to think about providing a really good intake.' | 82 | 1 | 10 | 29 |
| | | Encourages independent problem solving and active contributions | 'What else can you do; who has an idea?'<br>'Try to interpret it'<br>'Yes, and how do you proceed?' | 99 | 1 | 11 | 27 |
| | | Asks autonomy supportive questions | 'What do you think is important about..?'<br>'Do you know the Barbapapa's? Why do I have a picture of the Barbapapa's?'<br>'The song helicopter is a new one, who knows it?'<br>'Why is 20% the same as 1/5?'<br>'Who can help Kira?' | 2 173 | 5 | 94 | 51 |

| Actor | Value | Behaviour | Coded example | Frequency | Minimum per lesson | Maximum per lesson | Observed in unique lessons (n) |
|---|---|---|---|---|---|---|---|
| | | Offers student autonomy supportive help during exercises | A group of students is working, the teacher walks by and gives examples to clarify the assignment.<br><br>'How are you doing?' (a teacher starts a conversation with students to get them started) | 184 | 1 | 19 | 39 |
| | | Call to account (motivating) | 'Ladies, you are busy with something else.'<br><br>'We wait a while until everyone is quiet, then we know for sure that everyone is listening.' | 385 | 1 | 34 | 48 |
| | | Provides (non) verbal positive feedback | 'Super!'<br>'Very good!'<br>Thumbs up | 356 | 1 | 60 | 48 |
| | Demotivating (n=635) | Refers to the test | 'You must hand it in because it counts towards the scoring.'<br>'This is what you have to do for the test.' | 58 | 1 | 10 | 26 |
| | | Provides a one-dimensional instruction | 'What you are going to do today is to pick up a folder at my desk with your group.'<br><br>'Hey, listen, you will find a quiet place and make a group of four people ..' | 193 | 1 | 16 | 40 |
| | | Provides controlling support during exercises | 'I think you will start with the papier-mâché next week. Paper mache is next week's main goal. You will never finish that next week'.<br><br>'So, you have to say how they should have that paper. You have to explain that.' | 52 | 1 | 12 | 17 |
| | | Provides (non) verbal negative feedback | 'What do you say, intake is not a word, I will decide if that is a word.'<br>'(Sigh) Jennifer, Jennifer..'<br>Ignores student and continues to the next topic: 'Let's go to the fractions first.' | 103 | 1 | 13 | 22 |

| Actor | Value | Behaviour | Coded example | Frequency | Minimum per lesson | Maximum per lesson | Observed in unique lessons (n) |
|---|---|---|---|---|---|---|---|
| | | Asks controlling questions | Rhetorical questions, teacher asks a question and provides the answer him-/ herself ('90 out of 100 is therefore 90%') | 81 | 1 | 13 | 24 |
| | | Call to account (demotivating) | 'Don't show me that there is chewing gum there, Lana!'<br>'Stop it!'<br>'Yvet, Yvet, three times, Yvet' | 148 | 1 | 28 | 31 |
| Student | Positive Engagement (n = 1154) | A student asks a question from wanting | 'That is not a natural cleaning product, is it?'<br>'When can you become pregnant?' | 912 | 1 | 59 | 51 |
| | | A student supplements the teacher without any incentive (own contribution) | The students spontaneously call out what penalties they have received for being late and supplement the teacher with their examples. | 230 | 1 | 38 | 27 |
| | | | The student gives examples of unwanted pregnancies without being asked.<br>Student unsolicited shares her example of using the lancing device. | | | | |
| | | A student takes initiative | 'Shall I do the rabbit song?'<br>'I am going to work in the study centre.'<br>Student steps forward to present a dance pass that the teacher is explaining. | 12 | 1 | 3 | 10 |
| | Negative engagement (n = 264) | A student complains/ is nagging the teachers | 'That is stupid.'<br>'I really didn't understand a damn thing about it.'<br>'And ... (teachers name), and me, am I being ignored here again or something?' | 103 | 1 | 17 | 30 |
| | | A student asks a question from must | 'What do you actually need to complete before the test week?'<br>'Do I still have to do that assignment?' | 100 | 1 | 14 | 29 |
| | | A student does not keep appointment | Student is late.<br><br>(Teacher): 'Are you doing the assignment?'<br>(Student): 'No, I already know which political party I vote for.' | 61 | 1 | 12 | 30 |

**4.2.5. Analytic strategy**

To answer the research question and identify patterns in (de)motivating teaching and student engagement, the results of the observations were analysed in three different ways.

(1) To gain a sense of the most recurrent behaviours reflecting (de)motivating teaching and student engagement, descriptive statistics (frequencies, minimum and maximum occurrences) of all coded teacher and student behaviours were derived from the software The Observer XT (Noldus Information Technology, 2011).

(2) Second, lag-sequential analyses were extracted from Noldus to investigate the relationship between motivating or demotivating teaching behaviour ($lag_0$), and subsequent positive or negative student engagement ($lag_{+1}$). To investigate the sequential relationship between motivating and demotivating teaching, on the one hand, and positive and negative student engagement, on the other, a Chi-square test was performed. Additionally, for each specific teaching behaviour ($lag_0$), the relative frequency of subsequent positive and negative student engagement ($lag_{+1}$) was also calculated, also called *transitional frequencies*.

(3) T-pattern analyses were applied to identify patterns in teacher and student behaviour (Casarrubea et al., 2015; Casarrubea, Magnusson, Anguera, & Jonsson, 2018, Magnusson, 2000; Mascareño Lara, Snow, Deunk & Bosker, 2016). All data files were prepared to be compatible for analyses with the software Theme6 Edu (64bit). A T-pattern is a set of binary relations between events, which repeatedly occur in the data following the same order and within a specific time window. Unlike lag sequential analysis, T-pattern analysis bases its detection on units of time (i.e., a data-driven critical time window) rather than on lags of events. The pattern AB is detected when events A (e.g., teacher, motivating, asks autonomy-supportive question) and B (e.g., student, positive engagement, asks a question from wanting) are statistically significantly-related, that is, when within a critical time window, they follow each other more often than expected by chance. Therefore, the detection of this AB pattern does not necessarily mean that the events A and B follow each other directly—as in a sequential analysis with a lag+1. It means that although there could be other events coded in between A and B, those other events do not occur regularly in the same order within the critical time window, and therefore do not belong to the pattern.

Following the recommendations of the Theme6 manual and a previous study led by one of the authors (Mascareño Lara, Snow, Deunk & Bosker, 2016), we used the following pattern detection parameters: a) considering that classroom interaction is not a random process, we set a rather strict significance level of $p < .001$ for pattern detection; b) we used a lumping factor of .90, which implies that when in 90% of the occasions an event is associated with the same other event, the two events were lumped and taken as a unit; c) we also requested the detection of bursts, which are repetitions of the same event in a significantly ($p < .005$) shorter time frame than average.



After the preliminary search 24.566 patterns were identified.[8] Although the software Theme6 can find patterns of substantial lengths (the maximum in this data file was a pattern of 211 behaviours), there was no way of knowing if the behaviours contained in these patterns had a meaningful association in the natural flow of interaction. So, it could be that a question of a student was not necessarily a direct response to the teacher. Therefore, the aim was to capture the smallest possible interactional units (AB). Additionally, we also analysed interactional units that contained three behaviours (ABC) to explore whether there could be combinations of (de)motivating teaching behaviours and student engagement associated with positive or negative student engagement (ABC). In sum, we used quantitative selection criteria in order to further refine the pattern list to those relevant to this study: patterns of events that contained two actors (teacher and student), a minimum of one or two switches between actors and, a maximum length of three events were selected. This selection yielded 329 patterns.

Subsequently, qualitative as well as quantitative selection criteria were applied to answer the third research question. A qualitative selection was made to derive patterns that started with (de)motivating teaching behaviours and ended with student engagement. Within the 329 found patterns, 126 patterns were relevant in answering our research questions. These consisted of 91 *TS* patterns (27.66%) that started with (de)motivating teaching behaviour *(T)* and ended with student engagement *(S)*, and 35 *(S/T)TS* patterns (10.64%) that started with student engagement *(S)* or motivating teaching behaviour *(T),* followed by motivating teaching behaviour *(T),* and ended with student engagement *(S)*.[9]

Out of these 126 patterns, all patterns that started with teaching behaviours followed by student behaviour *(TS)* were selected and investigated their distribution across lessons. Then a quantitative selection was made and only the *TS* patterns that occurred in at least six lessons were kept (which is about 10% of all recorded lessons). These selection criteria yielded 41 relevant and statistically significant patterns ($p < .001$ in the present study).[10,11] between (de)motivating teaching and student engagement (patterns 1-41; see Table 2). Students taking initiative was considered to be an important indicator of (active) positive student engagement, but raw occurrences of this behaviour were rather low (12 times in total). Therefore, the search included all patterns that ended with students taking initiative; with this, one additional pattern was found.

[8] Prior to the search for T-patterns, all data files were aggregated into one multi-sample file. This file allowed a search for patterns in the overall dataset instead of a separate analysis per data file, still indicating which pattern occurred in which lesson (Magnusson, n.d.). Within the present study, the search included patterns of events up to three levels.

[9] In addition, there were 115 patterns (35%) that started with student engagement and ended with (de)motivating teaching behaviour and 93 patterns (28.27%) that started with (de)motivating teaching behaviour and also ended with (de)motivating teaching behaviours.

[10] It is important to note that, there could be overlap in the frequency in patterns of two or three behaviours. For instance, the 211 instances that pattern 2 was found could overlap in the 247 instances that pattern 1 was detected. Therefore, they should not be seen as completely different patterns.

[11] Since the pattern search is based on recurrent binary relations, the output usually yields patterns that overlap in content, such as patterns ((AB)C), (A(BC)) and ((BC)A); as these patterns are not substantially different, they were merged.

## 4.3 | Results

### 4.3.1 Baseline Frequencies

In total, 5,388 teacher and student behaviours were coded within 52 lessons (see Table 1). Overall, there was quite some variability across the lessons with respect to which certain behaviours were applied (see the ranges of the coded behaviour). For example, with regards to the teaching behaviour 'asking autonomy-supportive questions', there was one lesson in which the teacher did not express this particular behaviour at all, but there was also a lesson in which the teacher was observed to ask autonomy-supportive questions 94 times.

Of all coded teaching behaviours, 84% were coded as motivating. Teachers were mostly observed asking autonomy-supportive questions, calling students to account in a motivating way and providing them with positive feedback. To a far lesser extent were teachers observed providing students with choices, a rationale for a particular action or encouragement of their independent problem solving. Only 16% of the observed teaching behaviours, however, were coded as demotivating ($n$ = 635; 15.96%). The most frequently-observed demotivating behaviours were: asking controlling questions, providing negative feedback and one-dimensional instructions. Providing controlling support during exercises and referring to the test were observed to a much lesser extent.

Of all coded student behaviours, more than 81% were rated as positive student engagement. The majority of behaviours related to students' positive engagement stemmed from a desire to know something; to a lesser extent were students observed to supplement the teacher without any incentive. Students taking initiative were hardly ever observed. Indicators of students' negative engagement (19% of all student behaviours) were mostly expressed by students complaining or asking what they had to do. To a lesser extent were students observed to disregard appointments.

### 4.3.2 Lag Sequential Results

Results of the lag sequential analyses showed that motivating teaching ($lag_0$) was followed directly by positive student engagement ($lag_1$) in 85% of the occurrences (see Table 4.2). Teachers' demotivating behaviour ($lag_0$) was also most often followed by positive student engagement ($lag_1$), but to a lesser extent (66%). The association between (de)motivating teaching behaviour and student engagement was significant ($\chi^2[1] = 33.92$, $p < .001$, $\Phi = .19$), indicating that teachers use of either motivating or demotivating behaviour was sequentially associated with student engagement behaviours in the next consecutive turn of the interaction. Yet, the strength of the association was weak.



**Table 4.2** Frequencies of motivating or demotivating teaching behaviour followed directly by positive or negative student engagement ($lag_1$)[12]

| | Positive Student Engagement | Negative Student Engagement |
|---|---|---|
| Motivating Teacher Behaviour | 613 | 109 |
| Demotivating Teacher Behaviour | 115 | 60 |

When looking at the specific motivating teaching behaviours and their direct follow-up with student engagement (see Figure 4.1), motivating behaviours were most often followed by positive student engagement and hardly ever by negative student engagement. Furthermore, demotivating teaching behaviours were also most often followed by positive student engagement, but the results showed that – in contrast to motivating behaviours – there was a higher percentage of direct negative student engagement follow-ups. Specifically, providing negative feedback, asking controlling questions and/or referring to the upcoming test seemed to be followed by negative student engagement more frequently than any of the motivating behaviours.

Regarding motivating and demotivating teaching behaviours, some similarities and differences were observed. In particular, teachers' motivating support during exercises and their controlling support during exercises were equally likely to result in either positive or negative student engagement. Furthermore considering positive feedback, the vast majority of consequential student engagement was positive. With negative feedback, the chances of positive versus negative engagement were almost equal. Interestingly, calling students to account in a motivating way had a higher chance of being followed by negative student engagement (e.g., students complaining).

[12] It is important to note that, in the majority of cases, teacher behaviour was actually followed by teacher behaviour and not student behaviour. When teachers displayed motivating teaching behaviour, this was followed in 22% of the instances by an action indicating either positive or negative student engagement. In addition, demotivating behaviours were followed by actions of student engagement in 28% of the follow ups.

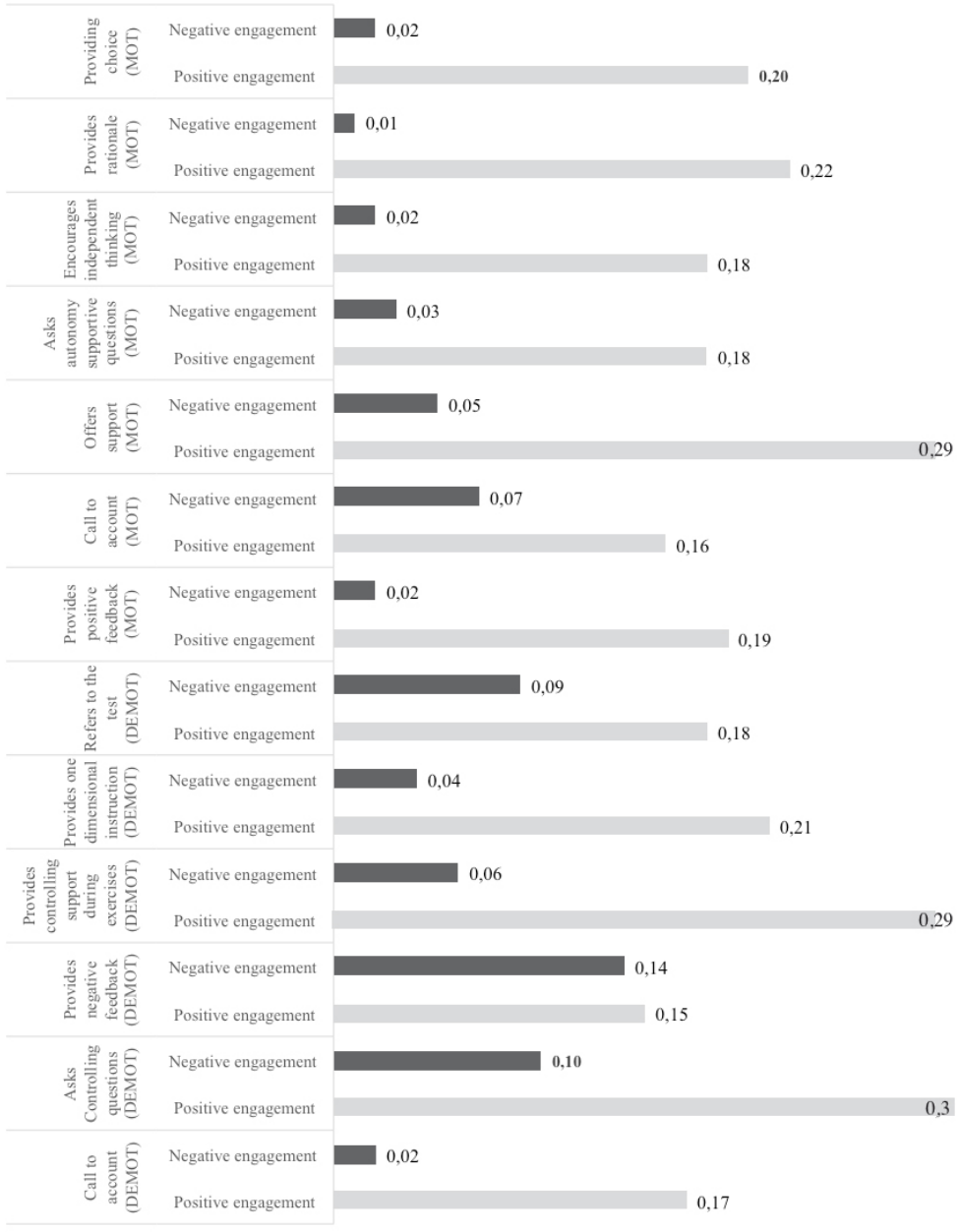


**Figure 4.1** Relative frequency of (de)motivating teaching followed by student engagement (lag +1)

### 4.3.3 T-pattern Results

The first and most recurrent pattern types were those in which motivating teaching behaviours were associated with positive student engagement (i.e. a student asking a question from wanting; patterns 1–9; see Table 4.3). The motivating teaching behaviours followed by students' positive engagement were when teachers asked autonomy-supportive questions, provided positive feedback and, to a lesser extent, providing autonomy support and calling students to account in a motivating way.

The second type of pattern (patterns 10–21, see Table 4.3) referred to patterns in which demotivating teaching behaviours were related to positive student engagement. The demotivating teaching behaviours associated with students asking questions from wanting, were combinations of one-dimensional instructions, calling students to account in a demotivating way, negative feedback referring to the test, and asking controlling questions.

In patterns 20–27, teachers used combinations of (de)motivating teaching behaviours in which they started with motivating instructional behaviours and then switched to demotivating behaviour (except for patterns 20, 21). Pattern 22, for instance, showed that a teacher first tried to call a student to account in a motivating way, but then combined this with a more controlling teaching behaviour (which relates to positive student engagement). Yet in pattern 20, it was the other way around: a teacher started with a controlling question, then quickly followed with an autonomy-supportive question (which also related to positive student engagement).

With regards to the other coded indicators of positive student engagement, only patterns 28 and 29 resulted in students supplementing the teacher without any incentive; in pattern 30 a student took the initiative. In patterns 28 and 29 the students were asked a question but the aspect they supplemented the teacher on was not simply answering this question but contributing further without being asked. Within these patterns specifically, teachers' use of autonomy-supportive questions seemed to be of importance. With regards to pattern 30, from the 12 occasions students were observed to take initiative, six were found to be part of a pattern that started with a teachers' use of autonomously-supportive questions and/or providing a rationale for the assignments or instruction.

Finally, Patterns 31–42 were those that closed with negative student engagement, mostly associated with demotivating teaching behaviours. In particular, providing a one-dimensional instruction, referring to the test, offering negative feedback and asking controlling questions seemed to be related to students asking a question from wanting to know more. Moreover, providing negative feedback and calling students to account in a demotivating or motivating way (patterns 41, 42) preceded complaints by students.

**Table 4.3.** Motivational Patterns Starting with Student or Teaching Behaviour and Resulting in Positive or Negative Student Engagement

| N° | Pattern of behaviour | Frequency | Occurred in n lesson | Range |
|---|---|---|---|---|
| | *Students asking questions from wanting* | | | |
| 1 | (S) Asking a question from wanting<br>(T) Asking an autonomy supportive question<br>(S) Asking a question from wanting | 247 | 36 | 1-39 |
| 2 | (T) Asking an autonomy supportive question<br>(S) Asking a question from wanting | 211 | 41 | 1-27 |
| 3 | (T) Providing positive feedback<br>(S) Asking a question from wanting | 83 | 31 | 1-10 |
| 4 | (S) Asking a question from wanting<br>(T) Autonomy support during exercises<br>(S) Asking a question from wanting | 62 | 21 | 1-9 |
| 5 | (S) Asking a question from wanting<br>(T) Providing positive feedback<br>(S) Asking a question from wanting | 58 | 25 | 1-7 |
| 6 | (T) Asking an autonomy supportive question<br>(T) Providing positive feedback<br>(S) Asking a question from wanting | 47 | 23 | 1-7 |
| 7 | (S) Asking a question from wanting<br>(T) Call to account (motivating)<br>(S) Asking a question from wanting | 39 | 23 | 1-8 |
| 8 | (T) Provides choice<br>(T) Providing positive feedback<br>(S) Asking a question from wanting | 11 | 10 | 1-2 |
| 9 | (T) Autonomy support during exercises<br>(S) Asking a question from wanting | 9 | 6 | 1-2 |
| 10 | (T) Providing one dimensional instruction<br>(S) Asking a question from wanting | 50 | 25 | 1-5 |
| 11 | (T) Call to account (demotivating)<br>(S) Asking a question from wanting | 50 | 25 | 1-7 |
| 12 | (S) Asking a question from wanting<br>(T) Providing negative feedback<br>(S) Asking a question from wanting | 25 | 10 | 1-9 |
| 13 | (T) Refers to the test<br>(S) Asking a question from wanting | 23 | 16 | 1-6 |
| 14 | (T) Providing negative feedback<br>(T) Call to account (demotivating)<br>(S) Asking a question from wanting | 17 | 10 | 1-7 |
| 15 | (S) Complains<br>(T) Call to account (demotivating)<br>(S) Asking a question from wanting | 16 | 13 | 1-2 |
| 16 | (T) Call to account (demotivating)<br>(T) Providing one dimensional instruction<br>(S) Asking a question from wanting | 13 | 10 | 1-3 |
| 17 | (T) Asks a controlling question<br>(T) Call to account (demotivating)<br>(S) Asking a question from wanting | 14 | 10 | 1-5 |
| 18 | (T) Asks a controlling question<br>(S) Asking a question from wanting | 14 | 8 | 1-5 |
| 19 | (T) Asks a controlling question<br>(T) Call to account (demotivating)<br>(S) Asking a question from wanting | 14 | 10 | 1-5 |
| 20 | (T) Asks a controlling question<br>(T) Asking an autonomy supportive question<br>(S) Asking a question from wanting | 23 | 13 | 1-8 |
| 21 | (T) Providing negative feedback<br>(T) Asking an autonomy supportive question<br>(S) Asking a question from wanting | 10 | 7 | 1-3 |
| 22 | (T) Call to account (motivating)<br>(T) Addressing to appointment (controlling)<br>(S) Asking a question from wanting | 23 | 14 | 1-6 |
| 23 | (T) Asking an autonomy supportive question<br>(T) Providing one dimensional instruction<br>(S) Asking a question from wanting | 14 | 9 | 1-5 |
| 24 | (T) Call to account (motivating)<br>(T) Asks a controlling question<br>(S) Asking a question from wanting | 10 | 7 | 1-3 |

| N° | Pattern of behaviour | Frequency | Occurred in n lesson | Range |
|---|---|---|---|---|
| 25 | (T) Asking an autonomy supportive question<br>(T) Providing one dimensional instruction<br>(S) Asking a question from wanting | 9 | 7 | 1-3 |
| 26 | (T) Providing a rationale<br>(T) Providing one dimensional instruction<br>(S) Asking a question from wanting | 9 | 7 | 1-2 |
| 27 | (T) Providing a rationale<br>(T) Call to account (demotivating)<br>(S) Asking a question from wanting | 8 | 6 | 1-2 |
| | *Students supplement the teacher without incentive* | | | |
| 28 | (S) Supplement the teacher (input)<br>(T) Asking an autonomy supportive question<br>(S) Supplement the teacher (input) | 83 | 18 | 1-16 |
| 29 | (T) Asking an autonomy supportive question<br>(S) Supplement the teacher (input) | 45 | 19 | 1-8 |
| | *Students taking initiative* | | | |
| 30 | (T) Asking an autonomy supportive question<br>(T) Providing a rationale<br>(S) Taking initiative | 6 | 6 | 1 |
| | *Students asking questions from Must* | | | |
| 31 | (T) Providing one dimensional instruction (S) Asking a question from must | 28 | 19 | 1-3 |
| 32 | (T) Providing negative feedback<br>(S) Asking a question from must | 16 | 9 | 1-4 |
| 33 | (S) Asking a question from wanting<br>(T) Asking an autonomy supportive question<br>(S) Asking a question from must | 13 | 9 | 1-4 |
| 34 | (T) Asks a controlling question<br>(S) Asking a question from must | 11 | 6 | 1-5 |
| 35 | (T) Refers to the test<br>(T) Providing one dimensional instruction<br>(S) Asking a question from must | 8 | 8 | 1 |
| | *Students complain* | | | |
| 36 | (T) Providing negative feedback<br>(S) Complains | 29 | 12 | 1-6 |
| 37 | (S) Complains<br>(T) Providing negative feedback<br>(S) Complains | 26 | 8 | 1-7 |
| 38 | (T) Call to account (demotivating)<br>(T) Providing negative feedback<br>(S) Complains | 23 | 8 | 1-3 |
| 39 | (T) Call to account (demotivating)<br>(T) Call to account (demotivating)<br>(S) Complains | 18 | 10 | 1-4 |
| 40 | (S) Complains<br>(T) Call to account (motivating)<br>(S) Complains | 16 | 10 | 1-5 |
| 41 | (T) Call to account (motivating)<br>(S) Complains | 9 | 7 | 1-3 |
| 42 | (S) Complains<br>(T) Call to account (motivating)<br>(S) Complains | 8 | 7 | 1-2 |

## 4.4 | Discussion

Considering the importance of positive engagement for students' current success in education and beyond, this study contributes to prior research by applying a microanalytic approach to investigating patterns of specific motivating and demotivating teaching behaviours and, in turn, students' positive and negative engagement behaviours. The microanalytic perspective revealed some interesting findings that offer a situational perspective, thereby adding to the body of research within the context of SDT.

### 4.4.1 Baseline frequencies

Overall the most often observed student behaviours were asking questions (positive and negative) and – to a much lesser extent – supplementing the teachers without an incentive (positive), and complaining (negative). Taking initiative was hardly ever observed. The low occurrence of the most proactive indicators of student engagement (supplementing the teacher and taking initiative) correspond to prior research (e.g. Lawson & Lawson, 2013) indicating that compliant engagement is the most dominant form of engagement in educational contexts. Although asking questions certainly requires student activity, they could also be prompted by an incentive from the teacher. Providing unsolicited input and taking initiative indicate a stronger emphasis

on students' proactive contribution in lessons (Reeve, 2013; Reeve & Tseng, 2011). When students are proactively engaged (i.e., agentic engagement), this relates to positive student outcomes such as academic progress, skill development, and the attainment of high academic achievement, whereas only being passively engaged (i.e. accepting one's environment as it is (agentic disengagement) could have a negative effect on students' academic progress (Jang et al., 2016). Furthermore, proactive engaged students are able to generate high-quality motivation for themselves and recruit high-quality support from their teachers (Reeve, 2013). Our results may indicate a need to increase focus on fostering students' proactive and agentic, rather than only on compliant (positive) engagement.

In terms of teaching behavior, teachers were mostly observed to engage in motivating behaviours such as asking motivating questions, providing positive feedback, and calling students to account. Demotivating teaching behaviours such as calling students to account in a negative way and providing one-dimensional instructions were also frequently observed. Our results showed that teaching behaviours related to supporting students' autonomy, for instance, encouraging independent thinking and allowing them to make their own choices (and mistakes), were among those applied least often by teachers. This finding is in line with prior research (Haerens et al., 2013; Van den Berghe et al., 2013), specifically within the VET context (De Bruijn & Leemans, 2011). Increasing the use of such strategies, in combination with providing the optimal level of structure, could however prove to be particularly beneficial in increasing more proactive and agentic contributions of students within lessons (Amoura et al., 2015; Fitzpatrick, O'Grady, & O'Reilly, 2018; Jang et al., 2010; Jang, Reeve, & Halusic, 2016). We believe this is a hypothesis worth exploring in future research.

**4.4.2 Patterns of (De)Motivating Teaching Behaviours and Student Engagement**

Concerning the patterns of student teacher interactions, both the results of the lagged sequential analysis as well as the T-pattern analysis revealed similar findings. The sequential analysis showed that overall, motivating teaching behaviours were followed more often by positive than negative student engagement, and demotivating teaching behaviours were followed more often by negative student engagement—as compared to motivating teacher behaviours. Similarly, also the results of the T-pattern analysis showed that motivating teaching behaviours were related to students' positive engagement during classes. Asking motivating questions, followed by students asking question from sheer interest (i.e., 'asks a question from wanting'), was by far the most salient pattern. In addition, and as might be expected, the T-pattern analyses showed a number of patterns in which demotivating teaching behaviours were associated with negative student engagement. In particular, providing negative feedback, controlling questions, and calling students to account in a demotivating way, were associated with students' negative engagement (e.g., student 'complains' or 'asks a question form must). These results, supporting motivating teaching being associated with positive student engagement and demotivating teaching being associated with negative student engagement are generally in line with prior research (De Meyer et al., 2014; Van den Berghe et al., 2013).

We did however also find patterns that go against these expected associations. The sequential analysis showed that demotivating teaching behaviours were frequently followed by positive student engagement, which was confirmed by the T-pattern analysis. Here we also found the unexpected patterns of demotivating teaching and positive student engagement, and between motivating teaching behaviour and negative student engagement. Calling students to account in a motivating way was found to be associated with negative student engagement whereas calling students to account in a demotivating was found to be associated with positive student engagement. Overall, classroom management (calling students to account) in a motivating or demotivating way was part of many of these contrasting patterns. Previous research has shown that the association of a particular teaching behaviour with student engagement very much depends on the general teaching style that a teacher has (Aelterman et al., 2014; Assor et al., 2002; Jang, Kim, & Reeve, 2016; Niemiec & Ryan, 2009; Reeve et al., 2009). Teachers differ in their basic style which could be generally motivating or demotivation, and this general style then moderates the relation of concrete teaching behaviours and student engagement. In other words, demotivating behaviours exhibited by teachers may have a less detrimental effect on student engagement when they are embedded in a generally motivating, supportive climate and teaching style, compared to when the general climate and teaching style is characterised as more demotivating and less supportive. Future research should investigate the interaction between the use of (de)motivating teaching behaviours from moment to moment, the teacher's general teaching style and student engagement.

Moreover, another unexpected result from the T-pattern analyses was that teachers use combinations of motivating and demotivating teaching behaviour, which were associated with positive student engagement. These results may indicate that when students do not respond in the preferred way, teachers have a tendency to switch to demotivating teaching, in order to prompt the desired reaction from students. For instance, when students do not respond to teachers' motivating way to call students to account, teachers start calling students to account in a more controlling way, probably to get students back in line. Prior research has revealed that there is a substantial number of teachers who believe that the use of motivating teaching behaviours is more challenging and time-consuming (Aelterman et al., 2013), or that their effectiveness is dependent on their perception of the abilities and motivation of the individual students (Domen et al. 2019). This may indicate that teachers combine both behaviours, either because they believe they will get the desired reaction quicker, or that combining these behaviours will engage a larger group of students. For future research, it would be interesting to investigate the exact use of these combinations of (de)motivating behaviours and investigate the nature of the reasons for switching between these different behaviours, for instance with video-stimulated recall interviews.

In sum, our results suggest that not all motivating teaching behaviour is followed by positive student engagement, and not all demotivating teaching behaviours is necessarily followed by negative student engagement. We also found that teachers use a mix of motivating and demotivating teaching behaviours within those micro interaction patterns. Thus, in the context of educational practice, the theorized relationship between (de)motivating teaching behaviour and student engagement may be less predictable and deterministic than one may expect, and in fact may be much more nuanced and situation-dependent. There are different avenues to interpret this non-deterministic

relation between (de)motivating teaching behaviour and student engagement, which we now try to outline.

First of all, a division into motivating and demotivating teaching behaviour may be too simplistic to capture the true nuances of observed teaching behaviours. Previous fine-grained research on motivating teaching showed at least eight subareas in the dimensions of (de)motivating teaching related to autonomy support, structure, control and chaos (Aelterman et al., 2019). Within these subareas, some behaviours lean more towards fostering students' motivation while others tend toward demotivation. For example, within autonomy support, asking supportive questions may show strong associations with structure while offering choice that may sometimes relate more with chaos. This fine-grained research suggests that the way teachers employ a certain type of (de)motivating behaviour can have a varying impact on student engagement from one instructional episode to the next, depending on: (a) the way this behaviour is expressed; (b) on the student-teacher relational context; and (c) on the students' specific needs at the time (Aelterman et al., 2019; Assor et al., 2002; Domen, Hornstra, Weijers, Veen, & Peetsma, 2019).

First, the nature and subject of the lesson, the nature of the task at hand, or the episode within the lesson will all partly determine which teaching behaviours teachers engage in (Jang 2008; Reeve 2016; Van den Berghe et al. (2016). Haerens et al. (2013), for instance, found that teachers provide more structure at the beginning of the lesson compared to the middle or end of the lesson. At the same time, students differ in their preferences, interests and motivations for certain subjects (Reeve 2016). Also, some subjects are naturally more engaging than others, and some tasks are more repetitive and dull than others, hence making it harder to engage students. All factors that are influencing students' engagement above and beyond the concrete behaviours of their teachers but that were not taken into account in the current study.

Second, the nature of interaction is transactional. This implies that the level at which the students are working, the teachers' perception of their students and student behaviour, may equally influence the teachers' behaviours toward their students (Pelletier, Seguin-Levesque and Legault, 2002; Pelletier and Sharp, 2009; Hornstra et al., 2015). Third, teaching practices do not occur in a vacuum (Niemiec & Ryan, 2009). Teachers are embedded in the (social) context of their school, that is they have to comply with a curriculum and performance standards and have to fit into a collegial team (Pelletier, Seguin-Levesque and Legault, 2002). All these more distal factors are likely influencing the very concrete behaviours that teachers enact in their everyday lessons.

"Finally, students' and teachers' own well-being, stress levels but also cultural norms, values and habits are also known to influence the behaviours that one is likely to engage in, as well as the way certain behaviours of others are perceived and interpreted (Abaciolo, Volman & Fischer, 2020). Thus, although our research revealed important insights into the temporal organization of teacher-student micro interactions, thereby contributing to the current literature, we have to acknowledge the complexity of the association between (de)motivating teaching behaviour and student engagement and the variety of factors that may influence and underlie the observable behaviours. If we truly want to understand the underlying mechanisms driving teachers' and students' behaviours and how they influence each other, we will have to move beyond the 'black-box' approach presented here and combine these quantitative observational methods with more contextualized and qualitative approaches (Abaciolo, Volman & Fischer, 2020).



**4.4.3 Strengths, Limitations and Directions for Future Research**

A definite strength of this study is the microanalytic approach that offers a new perspective on the situational dependency of teachers' use of motivating teaching in their daily educational practice. This approach further adds to SDT research with insights on the specific use and association between (de)motivating teaching and positive or negative student engagement. Obviously, the present study was subject to several limitations, which also delineate avenues of exploration for future research.

The coded student engagement, however, represents the behaviour of an entire class of 15–30 students. As the coded behaviours were not linked to individual students, the coded student engagement may represent the behaviour of just three students with a very active engagement in the lesson or a whole class of engaged students. In other words, it was not investigated if it was the same students that showed active engagement within each class. As research indicates, there are individual differences in students' engagement (Shernoff et al., 2016), students differ in the quality of their motivation in class (Cents, Lichtwarck-Aschoff, Dennessen, Haerens & Aelterman, 2019; Hayenga & Corpus, 2010; Ratelle et al., 2007; Vansteenkiste at al. 2009), and teachers differentiate their behaviour based on their expectations of students' motivation, abilities and background characteristics (Domen et al., 2019). An interesting avenue for future research would be to examine the interactions of students observed with different degrees of engagement, with the same teacher. Such line of research would further recommendations for teachers to better foster the engagement of an entire class.

In addition, to not knowing whether the same students were active in every lesson, more passive compliant forms of engagement (e.g., paying attention, responding to teachers prompts) or disengagement (e.g., staring out the window) were not coded, nor were any of the invisible aspects of student engagement (e.g., students' perception on their cognitive and emotional engagement). It could be that groups of students show different profiles in class: while one group is actively involved, a second group of students could be more passively engaged, whilst a third group of students checked out all together and the fourth group is actively disturbing the lessons with negative engagement. This calls for observing additional types of student engagement of the individual students in combination with using self-reports, in order to gather information on their cognitive/emotional engagement. Combining more extensive observations and self-reports of student engagement could lead to more in-depth profiles of the variety of student engagement per lesson, which would be specifically interesting to investigate with regards to their relation to motivating teaching.
"Although with regard to motivating teaching we found that autonomy support and structure were related to students' positive engagement we did not code any behaviours related to relatedness support. Within SDT motivating teaching is operationalized as teacher's behaviours divided into three separate dimensions corresponding to the three basic needs of students: autonomy, relatedness and competence. Yet in observing

concrete teaching behaviours, behaviour often represents a mix of these teaching dimensions. Although not coded, from an informal impression autonomy support and structure were often provided with a warm tone of the teacher showing empathy and responsiveness, which corresponds to relatedness support. Similarly, although providing choice is considered to be autonomy supportive, it may not be when it lacks any structure or guidelines and is delivered in a cold and distant manner. Relatedness support in fact may functions as a sort of emotional climate that moderates the effects of concrete autonomy and competence supportive behaviours (Sparks, Dimmock, Lonsdale & Jackson 2016). Prior research already showed that strong positive relations may exist between the three basic needs (Jang et al., 2009; Reinboth et al., 2004; Taylor & Ntoumanis, 2007). It is very likely that it is exactly the right balance in satisfying students' needs that make some concrete behaviours more motivating than others. We encourage future studies to dive into the complex interplay of various teaching dimensions and how they affect students' engagement."

Last, recent research shows strong support for the idea of a more reciprocal relationship between (de)motivating teaching behaviour and students' engagement (Matos, Reeve, Herrera, Pennings, & Claux, 2018; Reeve, 2013; Van den Berghe, Tallir, Cardon, Aelterman, & Haerens, 2015). Our results seem to further support this reciprocal relationship suggesting that students' engagement also affects teachers' behaviour. Yet, in our exploration of the interaction patterns, the specifics of coherent micro interactions were not included, with a clear starting point and end. In contrast, the start of the pattern was an arbitrary starting point, which does not necessarily correspond to the natural interaction sequence. Therefore, it was not possible to investigate who actually started a coherent micro-interaction (the teacher or the student), how many behaviours were part of that interaction and when that interaction ended. Therefore, within future research it would be a valuable addition to differentiate within the coding between different student-teacher interactions (start and end). This will further increase the understanding of the complexity and reciprocal associations between (de)motivating teaching and student engagement within daily interactions.

**4.4.4 Practical Implications**

The results of this study indicate that motivating teaching behaviour increases the likelihood of positive student engagement. The findings could have implications on multiple levels, for instance, in interventions for existing teachers, teacher education and the curriculum (cf. designing lessons). With regards to teaching, this study showed that the motivating behaviours that related to active contribution of students (i.e., providing choice, offering a rationale and encourage independent thinking) seemed to be the least applied. More variety in motivating behaviours could help promote positive and proactive engagement among students. Intervention studies on applying motivating teaching and more motivating elements in curricula based on SDT (Su & Reeve, 2011) showed promising results in terms of supporting teachers and student teachers in the use of motivating teaching behaviours. These could be effective both for existing teachers as for future teachers within teacher education.

In addition, the results of this study show an urgent need for teachers' flexibility as our research also implies that the impact of motivating teaching behaviours is dependent on the context (Assor et al., 2002). In a class with students with an interest in creative subjects, a teacher may need less and different motivating teaching behaviours than in a class with a lot of students with an utter dislike of creative subjects. Therefore, a practical implication of this research is that teachers need to be flexible in their use of motivating teaching behaviours and not get discouraged if a well-designed attempt misses its target. Discussing the contextual factors that could influence the impact of motivating teaching behaviour could be an important addition to interventions.

With regards to curriculum design and lesson planning, research has showed promising approaches to fostering agentic student engagement. For instance, teaching in students' preferred ways (Jang, Reeve & Halusic, 2016), supporting teachers to become more aware of students' classroom needs (and concomitant adaptions to the lesson plan) could foster a more productive classroom environment. In addition, Fitzpatrick et al. (2018) introduced the Negotiated Integrated Curriculum initiative, which increases students' agentic engagement by involving them in curricular decision-making. These are just some examples of beneficial ways in designing lesson plans and curricula that can foster students' initiative in learning and thereby stimulate their active contribution during lessons.

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# Chapter 5

## General Discussion

The studies in this dissertation originate from VET-students' worldwide challenges with their motivation for VET, which could ultimately impact their chances of building a successful career (Billett et al., 2010; Brahm, Euler, & Steingruber 2014; Nielsen & Tanggaard, 2015; Wallace, 2013; White & Laczik, 2016). There are several strong indicators that this is also true for Dutch VET-students. In the Netherlands, a substantial number of VET-students start with low motivation, switch between tracks or ultimately drop out (Elffers, 2011; Inspectie van het Onderwijs, 2015; Vugteveen, Timmermans, Korpershoek, van Rooijen, & Opdenakker, 2016). Teachers are considered to be crucial influencers of student motivation in schools (Hamre et al., 2013; Nguyen, Cannate & Miller, 2018). Several studies have shown that VET-students themselves report that teachers are important linchpins in fostering their motivation for school by engaging them in their lessons (Attwood, Croll, & Hamilton, 2003; Brahm et al., 2014; Fix, 2018; JOB, 2016, 2018; Van Uden, Ritzen, & Pieters 2014). In this dissertation, we started from Self-Determination Theory to conduct three studies to investigate VET student motivation and engagement within lessons and how this relates to teaching behaviours that are (de)motivating. Furthermore, as a practical goal, we wanted to provide concrete recommendations to teachers to support them in fostering their students' motivation.

## 5.1 | Summary of Main Findings per Study

*Chapter 2* mainly focussed on the general quality of VET-student motivation for school (meso level) in relation to how students experience their educational context (i.e., test-anxiety, self-efficacy and teacher behaviours to motivate learning). Our aim was to investigate whether specific groups of students with motivational challenges could be identified. VET-student motivation for school was investigated by combining a variable-oriented and person-centred approach with profile analyses on questionnaires from 195 students. The variable-oriented approach showed that VET-students had reasonable levels of autonomous motivation and not very high levels of controlled motivation. Yet the person-centred approach showed a substantial number of students in the low-quality cluster, with - relatively speaking - significantly lower levels of autonomous motivation and higher levels of controlled motivation. Students in this low-quality profile reported the highest levels of test anxiety and lower levels of self-efficacy compared to the high-quality cluster students who displayed high levels of autonomous motivation and low levels of controlled motivation. This group also experienced their teachers as less motivating. Specifically, these students reported lower levels on their perception of their teachers' autonomy support, structure and relatedness support. Thus, we concluded that in our sample there was a large group of VET-students that requires special attention as they experience motivational challenges.

*Chapter 3* investigated indicators of student engagement by comparing teacher and student behaviours in lessons with either high or low levels of student engagement. We coded 145 videotaped lessons with an observational tool designed to observe (de) motivating teaching behaviours in physical education lessons (Haerens et al., 2013; Van den Berghe et al., 2013). This instrument was extended to the diverse lessons in VET-education that range from general and creative subjects to vocational subjects and counselling. Within intervals of five minutes, de(motivational) teaching behaviours and five indicators of student engagement were rated by trained observers. Based on the mean levels of student engagement, we selected the lessons with the highest levels of student engagement (10%) and the lessons with the lowest levels of student engagement (10%) for additional analyses. The results of this study showed that different motivating teaching behaviours were positively associated with different indicators of student engagement. For example, providing room for experimentation and support during exercises was especially beneficial for student active behavioural engagement. Conversely, different demotivating teaching behaviours were found to be negatively related to indicators of student engagement. For instance, teachers' controlling behaviours (e.g., exercises power over the students, commands students, uses controlling language and is irritated, loses his/her patience) were negatively associated with students' emotional and passive engagement. Furthermore, we concluded that there were distinct differences in teachers' use of behaviours that were (de)motivating throughout the course of lessons with either high or low engagement. Teachers in lessons with high levels of student engagement typically started the lesson with higher levels of enthusiasm and actively engaged their students in activities after 15 minutes while providing higher levels of support and room for experimentation.

*Chapter 4* focussed on investigating the situational dependency of motivational teaching behaviours and student engagement within student–teacher interactions by applying a micro-analytic approach. For this purpose, an observational instrument based on event-coding was developed. Event coding entails coding every relevant behaviour of the teacher or students at the exact moment it occurs. This instrument allowed the examination of patterns in the occurrence and variation of specific teacher and student behaviours. Of the 145 videotaped lessons that were coded with interval rating (e.g., chapter 3), we selected the first recording of each teacher for analyses. In total 52 lessons with a total of 5,388 teacher and student behaviours were coded. The results of this study showed that motivating questions, positive feedback and support during exercises were positively associated with positive student engagement. Unexpectedly, there were also some demotivating teaching behaviours, such as referring to the test, that on occasion were also found to result in students' positive engagement. In sum, the results of this study advocate the use of teaching behaviour that motivates students. Not all instances of such teaching behaviours, however, will automatically lead to positive student engagement. This could suggest a situational dependency of the impact of motivating teaching behaviours on student engagement or vice versa.

The current chapter provides a discussion of these main findings from the perspective of our overall research aims. After some theoretical and methodological reflections and a discussion of directions for future research, this chapter concludes with practical implications for teachers and VET-colleges.

## 5.2 | Discussion and General Conclusions

The ultimate goal of this dissertation was to explore the way (de)motivating teaching is related to VET-student motivation and engagement. The dissertation had three major research aims. The first was to investigate the quality of VET-student motivation for

school and their engagement in lessons. The second aim was to examine teachers' use of (de)motivating teaching behaviours within lessons. The third and final aim was to explore how (de)motivating teaching behaviours are related to motivation and engagement within lessons. I will summarise and discuss the main findings in light of these three aims in the following sections.

### 5.2.1 Research Aim 1: Investigating VET-student Motivation for School and Student Engagement in Lessons

Poor motivation is a major risk factor for school dropout which then causes several societal problems (Dubeau, Plante, & Frenay, 2017; Peetsma & van der Veen, 2008; Vugteveen et al., 2016). With regard to the quality of motivation, Self Determination Theory (SDT) in general distinguishes autonomous motivation (i.e., people want to engage in activities; high quality of motivation) and controlled motivation (i.e., people feel pressured to engage in activities; low quality of motivation). From an SDT perspective, numerous studies have shown that autonomous motivation is related to positive student outcomes, such as low dropout rates (Hardre and Reeve, 2003; Vallerand, Fortier, & Guay, 1997), increased persistence (Vallerand & Bissonnette, 1992) and higher academic performance (Barkoukis et al., 2014). In contrast, controlled motivation predicts negative outcomes, such as school dropout (Vallerand et al., 1997) and low school achievement (Barkoukis et al., 2014; Soenens & Vansteenkiste, 2005). Little scientific research has thus far investigated VET-students' quality of motivation or explored their possible motivational challenges (van der Veen et al., 2013). Therefore, we aimed to investigate VET-student motivation for school and student engagement in lessons before exploring ways to support VET-student autonomous motivation.

With regard to VET-student motivation on a meso level (overall motivation for school), the 195 participating students in chapter 2 reported reasonable levels of autonomous motivation (i.e., intrinsic and identified regulation) and lower levels of controlled motivation (i.e., external and introjected regulation). In terms of autonomous motivation, students had the highest levels of identified regulation but not intrinsic motivation, which indicates that students seem to understand the value and usefulness of school but that they enjoy going to school to a lesser extent (Ryan & Deci, 2000). Based on the descriptives in the total sample, one could thus assume that there were no real motivational problems in this population of VET-students. Yet the profile analyses revealed a quite different pattern of results. Although we found the same profiles as in prior SDT research (Vansteenkiste et al., 2009), namely the high- and low-quantity profiles and a high- and low-quality profile, the distribution of students across each of these profiles was quite different when compared to prior research. In contrast to past studies with student populations, such as high school and college students (Ratelle et al., 2007, Vansteenkiste et al., 2009), we found that in our population of VET-students, the low-quality profile (i.e., relatively high levels of controlled motivation and low levels of autonomous motivation) contained a much larger proportion of students. In fact, about 41% of students belonged to this profile. This indicates that, compared to other student populations, a substantial large proportion of the VET-student population had a low-quality motivation for school. Students within the low-quality motivational profile reported higher levels of test anxiety and lower levels of self-efficacy. These results resemble those of prior research within VET that have shown that throughout their school career, VET-students typically belong to the lower achieving group (Peetsma & van der Veen, 2015) and that a proportion of students lost confidence in their capabilities (Fuller & Macfadyen, 2012; Glaesser, 2006). Consistent with our results, VET-students in these prior studies reported lower self-efficacy (Fuller & Macfadyen, 2012; Glaesser, 2006) and higher anxiety about testing (Rozendaal, Minnaert, & Boekaerts, 2003). This pattern of results is also in line with the idea of Lawson and Lawson (2013) that if students lack early school success, they will gradually start to withdraw from active engagement in school activities.

Therefore, we wanted to explore if student challenges with regard to the quality of their motivation at a meso level would also be visible at the micro level, that is in their engagement within lessons. From the perspective of SDT, the quality of student motivation in lessons that can be observed is their engagement (Reeve, 2012; Skinner & Belmont, 1993). Although student engagement is considered to be a multidimensional concept, most researchers agree that, in general, engagement encompasses: emotional (i.e., student affective reactions to classroom activities), cognitive (i.e., understanding the importance of their education, formulating their own learning goals) and behavioural aspects (i.e., involvement in the learning process; Skinner, 2016; Wigfield et al., 2015). Student behavioural engagement can vary from more passive forms of engagement (e.g., just listening to the teacher), to proactive engagement in which students take their own initiative in class (Nguyen et al., 2018).

In chapter 3, observers rated students' emotional, passive and active behavioural engagement on an interval bases in 145 lessons. The observational data presented in chapter 3 showed that VET-students specifically enjoyed the lessons (emotional engagement) and were paying attention (passive behavioural engagement). With regard to students' active behavioural engagement, we observed students mostly asking questions in the lessons and putting effort into their assignments. Student behavioural engagement was also observed in the study presented in chapter 4 in which 52 of the in total 145 lessons (each teachers 'first recording') were analysed. Recognising that not all states of student engagement are equally beneficial, we distinguished between engagement that was associated with positive student outcomes (positive student engagement) and engagement associated with negative student outcomes (negative student engagement). The results of Chapter 4 showed that although students were regularly observed to ask questions, more pro-active forms of engagement (e.g. actively contributing to the lesson, taking initiative) were rarely ever observed.

Our results further contribute to the argument of Nguyen et al. (2018) that underlines the importance of making distinctions between active and more passive compliant forms of student engagement, specifically considering a recent shift in the way SDT conceptualises student engagement (Montenegro, 2017). SDT's earliest views on student engagement were more in line with the more dominant form of student engagement in classrooms, namely, passive compliant behaviours of student engagement (e.g., students reacting to triggers and stimuli of their teachers; Lawson & Lawson, 2013). Currently within SDT research, a distinction is made with a third form of engagement (i.e., agentic engagement) which displays a more action-oriented definition of student engagement (Appleton et al., 2008; Montenegro, 2017; Reeve, 2013) that is characterised by students who actively contribute to lessons and thereby positively enrich their own

learning activities). In our research, we found a rather low occurrence of this type of engagement in lessons. The low occurrence of (pro)active engagement which contributes to a self-determined learning process (Jang, Kim, & Reeve, 2016; Reeve, 2012; Ryan & Deci, 2000, 2016) could be a reflection of students' motivational struggles in general.

Our findings add to the validation of SDT in the context of VET. The majority of our findings were in line with SDT. With regard to student motivational profiles, we found similar profiles to those of prior research (Hayenga & Corpus, 2010; Ratelle et al., 2007; Vansteenkiste et al., 2009). Overall, the findings of our three studies regarding student motivation and engagement seemed to reinforce each other in showing that a substantial group of VET-students experience motivational challenges both at a meso level (e.g., in their motivation for school) and at a micro level (e.g., in their [active] engagement in lessons). Although this is more evident with regards to students' motivation than with their engagement in class. It could be that in class students participate or are otherwise passively engaged, but do so for controlled motives, which are not observable. As such engagement remains an indirect indicator of motivation. Yet, investigating the distinction between students' passive and active engagement provided a valuable contribution to a more detailed understanding of the specific motivational challenges that VET-students experience. Our results indicate that the challenge for teachers, specifically given the substantially large group of students in the low-quality motivational profile, seems to specifically be in fostering VET-students' active engagement.

#### 5.2.2. Research Aim 2: Examine Teachers' use of (De)motivating Teaching Behaviours within Lessons

According to SDT, teachers can promote students' autonomous motivation by supporting their students' basic psychological needs: autonomy, competence and relatedness (Hadre & Reeve, 2003), as these needs are the primary 'building blocks' to foster motivation (Stevens, 2004; Vansteenkiste et al., 2012). Applying this to the context of teaching indicates that teaching which motivates consists of: autonomy support so students experience a sense of volition and psychological freedom (i.e., need for autonomy); structure, which enhances students' feelings of effectiveness and belief that they are able to perform the task (i.e., need for competence); and relatedness support such that students experience a sense of closeness and friendship (i.e., need for relatedness). A unique feature of the presented studies is that teachers' motivating teaching were determined based on observations, while most prior work has relied on self-reports. While studies using questionnaires (for example, Haerens et al., 2015; Molinari & Mameli, 2017) present very valuable support which suggests a positive relationship between motivating teaching behaviour and student autonomous motivation, they only very broadly indicate how these behaviours are related. More recently, SDT-based observational studies have complemented prior questionnaire research, providing more insights into teachers' actual use of motivating teaching behaviours across lessons (Haerens et al., 2013; Van den Berghe et al., 2013).

The observational data presented in Chapter 3 showed that within lessons, teachers provided their students with predominantly high levels of relatedness support (e.g., pay attention to what students are saying, enthusiasm, physical closeness). Teachers to a much lesser extent engaged in autonomy-supportive or structuring teaching behaviours. With regard to autonomy support, chapter 3 showed that teachers predominantly used inviting language, and within chapter 4, teachers predominantly asked autonomy supportive questions. Teachers to a much lesser extent used autonomy supportive behaviours to activate their students, such as providing choice, experimenting, encouraging independent problem solving or providing a rationale (both chapters 3 and 4). With regard to structure, teachers mostly provided clear instructions and monitored students to see if they lived up to these instructions. Teachers to a much lesser extent used positive feedback or supported students during exercises. In addition, teachers hardly ever used students as positive role models, provided variation or demonstrated something themselves. These results tie in well with previous studies wherein the behaviours related to teachers' autonomy support and structure were among the least observed behaviours (Haerens et al., 2013; Van den Berghe et al., 2013). Specifically, differentiation, choice and providing new guidelines and tips during exercises were equally low as was the case in these prior studies using the same observational instrument. Yet in comparison to the studies of Haerens et al. (2013) and Van den Berghe et al. (2013), behaviours such as providing positive feedback, offering help while students are at work and providing variation were even lower in our studies compared to these studies. These findings are highly important as each of these strategies that were seldomly observed has proven to enhance autonomous motivation. To illustrate, De Meester et al. (2020) in an experimental study showed that students who watched a video of a student provided with choices and who were then asked to imagine they were that student anticipated higher levels of autonomy, competence and relatedness satisfaction and autonomous motivation than students who watched a video in which no choice was offered. They found the same result for positive feedback, students who watched a student getting positive feedback also anticipated higher levels of need satisfaction and autonomous motivation. In addition, in a meta-analysis of 41 studies, Pattel, Cooper and Robinson (2008) found that providing choice enhanced autonomous motivation.

Concerning demotivating teaching behaviour, in line with prior research, these behaviours rarely occurred (Van den Berghe et al., 2013; De Meyer et al., 2014). The most frequently observed demotivating behaviours were related to a controlling style (i.e., controlling language/commanding students) just as in the study of Van den Berghe et al. (2013) with physical education teachers, but the levels on all items of controlling teaching were lower among VET-teachers then teachers in physical education. Regarding chaotic teaching behaviours, levels were lower than found by Van den Berghe et al. (2013), except for allowing chaos and leaving students to their own devices, which was higher. For cold teaching, the mean of most items was slightly lower then found by Van den Berghe et al. (2013). When teachers were observed to apply cold teaching behaviour they were mostly observed to be distracted, which was at approximately the same level as found by Van den Berghe et al. (2013).

The findings presented in chapters 3 and 4 also showed quite some variety in the levels of motivating teaching across lessons. For instance, in chapter 3, teachers were observed using very high amounts of motivating teaching behaviours in one lesson and very little in the next. The finding that not all teachers consistently provide lessons with high levels of motivating teaching behaviours could indicate that the use of motivating teaching behaviours is partly dependent on the context and can differ from situation to

situation, which is in line with prior studies (Aelterman et al., 2019; Amoura et al., 2015, Krijgsman et al., 2019). Research from Aelterman et al. (2019) suggests that depending on the context teachers may switch from one type of motivating behaviour to another or even switch from motivating to demotivating teaching behaviours. Furthermore, Amoura et al. (2015) found that there are teachers that use high levels of both autonomy support as well as high levels of control. It could be that teachers use specific autonomy supportive teaching behaviours to counterbalance the negative effects of their controlling behaviours. For instance, acknowledging students' feelings (autonomy support) because the teacher is strict about a deadline (control). In line with SDT, our findings could indicate that the use of (de)motivating teaching behaviours is dependent upon situational factors within the social context of the college, such as the pressure from above (teachers have to comply with a curriculum, with colleagues and with performance standards) and pressure from below (their perception of their students; Matos, Reeve, Herrera, & Claux, 2018; Pelletier, Seguin-Levesque, & Legault, 2002; Pelletier & Sharp, 2009; Ryan & Deci, 2016; Van den Berghe et al., 2016). This pressure from above and below could hinder teachers' own need satisfaction and make them feel very restricted instead of self-determined toward teaching, causing them to teach in a more controlling way than is their personal preferred way of teaching (Pelletier et al., 2002).

Overall, teachers seemed to be more focused on providing students with relatedness support than in providing them with autonomy support and structure. Furthermore, although they were applied, demotivating teaching behaviours seemed to be greatly outnumbered by motivating teaching behaviours. Our results also contribute to prior research which suggests that teachers' use of motivating teaching can change from lesson to lesson and moment to moment.

### 5.2.3. Research Aim 3: Explore how (De)motivating Teaching Behaviours are related to Motivation and Engagement within Lessons

From early on, SDT research showed that teaching that supports students' basic needs is a very promising avenue in fostering student motivation (Jang, Kim & Reeve, 2016; Molinari & Mameli, 2018; Quin 2017). It has been established in a number of studies that when students report higher levels of motivating teaching from their teachers, they tend to report higher autonomous study motivation (Vansteenkiste et al., 2012; Reeve et al., 2004). On the other hand, when students report higher levels of demotivating teaching (e.g., controlling, chaotic or cold teaching), it has been shown to result in a more controlled motivation (Haerens et al., 2015; De Meyer et al., 2014; Van den Berghe et al., 2013, 2016). In addition to studies that use self-report, observational studies further support the argument that motivating teaching is a beneficial way to foster student motivation and engagement within lessons; they also indicate that teachers' adoption of motivating and demotivating teaching behaviours may differ from lesson to lesson (Hornstra et al., 2018; Krijgsman et al., 2019; Reeve, 2016; Van den Berghe et al., 2013).

Whereas chapter 2 focused on student motivation for school more generally (i.e., meso), chapters 3 and 4 relied on observations of student engagement as an indicator of their motivation within a specific lesson (i.e., micro). As such, chapter 2 provided more general insights by showing that student reported motivation on a meso level was associated with student perception of their teachers' motivating teaching. Autonomous motivation, in particular identified regulation, was positively associated with student perceptions of their teachers' autonomy support, structure and relatedness support. This is in line with prior research that also suggested identified regulation as an important regulation for positive experiences with the educational context (Vansteenkiste et al., 2018). More specifically, our study showed that students in the high-quality or high-quantity motivational profiles reported the highest levels of their teachers perceived autonomy support, structure and relatedness support. Furthermore, chapter 2 showed that students in the low-quality profile reported lower levels of perceived motivating teaching. Although these students may pose a challenge for teachers, additional support for these students' engagement in lessons (micro level) could be a promising way to foster their motivation for school in general (meso level).

Chapter 3 and 4 provided more fine-grained and detailed insights because in these studies, motivating teaching could be more concretely operationalised based on observations. Regarding the relation between student motivation on a micro level (i.e., their engagement), chapter 3 showed different motivating behaviours to be related to different indicators of student passive, emotional or active engagement in line with Jang et al. (2009). First, the results of our studies confirm the importance of providing positive feedback as this was related to all types of student positive engagement. Our work thus confirms the findings of prior studies, both correlational and experimental (Mouratidis et al., 2008; De Meester et al., 2020), that show that positive feedback can enhance students' proactive engagement in class.

The results of chapter 3 also showed that students' passive and emotional engagement and teachers' use of autonomy support, particularly strategies such as asking students to participate and the use of inviting language, seemed important. Passive and emotional engagement were also related to relatedness support, specifically with the teachers' enthusiasm and energy within the lessons as well as their empathy towards the students. Apart from providing positive feedback, addressing students by their first name and using students as positive role models, no other structuring behaviours appeared to be crucial for students' passive and emotional engagement.

Chapter 3 further showed that for students' active engagement, the following autonomy-supportive, structuring and relatedness-supportive behaviours appeared to be crucial: offering choice and room for experimentation (autonomy support); offering new tips, guidelines and support during exercises (structure); and, to a lesser extent, teachers' enthusiasm, empathy and ability to listen (relatedness support). Additionally, chapter 4 showed the most salient interactional pattern was teachers asking autonomy-supportive questions which was positively associated with students asking questions (positive student engagement). In addition, chapter 4 further strengthened the results of chapter 3 by showing that positive feedback, providing autonomy support during exercises and providing choice were also part of the reoccurring significant patterns associated with positive student engagement. A combination of asking an autonomy supportive question and providing students with a rationale were related to the hardly observed exercise of initiative by students themselves in lessons. The practical components of VET-students aspired vocations might be one reason the teaching behaviours (e.g. offering choice and room for experimentation; offering new tips, guidelines and support during exercises),

related to active student engagement, could specifically be important for these students. This makes it more beneficial for teachers to support students in learning by doing and not as much by only instructing them in the classroom (Heusdens, 2018).

In fostering students' active engagement, chapters 3 and 4 showed, in particular, that the specific aspects of autonomy support and structure seemed to be beneficial. This is in line with the findings of Aelterman et al. (2019), which suggested that teacher participative (i.e., providing choice and stimulating students' sense of initiative) and guiding behaviours (i.e., offering help and guidance) are key in fostering students' active engagement. These findings are also consistent with research on scaffolding which concerns with guiding students with what they cannot do yet, providing them with an appropriate amount of challenge. With regard to scaffolding the control of the teachers is adjusted to the student and fades along the way, requiring the student to become more active and ultimately to perform the task alone (Van de Pol & Elbers, 2013). Van de Pol and Elbers (2013) found this to be effective for student learning as long as teachers succeed in accurately diagnose students actual level of understanding. Furthermore, our research findings correspond with Jang et al. (2009) who found that not only autonomy or structure were important in fostering student engagement but also the combination of both. Jang et al. (2009) found that both autonomy support and structure contributed to student engagement in a unique way. Autonomy support seemed important to overall student engagement (observed and self-reported) whilst structure seemed to be specifically important to foster students' behavioural engagement. Considering their importance, it is striking that there was a low occurrence in the teachers' use of offering choice and room for experimentation (autonomy support) and in providing feedback, offering new tips, guidelines and support during exercises (structure). Several intervention studies have demonstrated that teachers can be trained to adopt these motivating strategies for the benefit of student engagement and motivation (Aelterman et al., 2014; Reeve et al., 2004; Su & Reeve, 2011; van der Veen et al., 2013; White & Laczik, 2016).

In this dissertation, the main focus was on behaviours that foster student motivation, yet we also explored how demotivating teaching behaviours were associated with student engagement in class. As chapter 3 showed, controlling teaching behaviours thwarts students' passive and emotional engagement whilst chaotic teaching behaviours thwart students' active engagement. Thus, there seem to be differences in the types of demotivating behaviour that thwart either passive or active behavioural student engagement. Furthermore, teachers in lessons with low levels of student engagement used more chaotic teaching behaviours compared to lessons with high levels of student engagement. These teachers were also observed to start their lessons with higher levels of irritation, allowing chaos for students while ending their lessons again with higher levels of irritation and verbal instructions. Towards the end of lessons, teachers in lessons with low student engagement, showed the highest levels of enthusiasm toward the end of the lessons, indicating the teachers might be eager to end the lesson and may become irritated if anything got in their way, which corresponds with Reeve's description of impatient teachers (Reeve, 2016).

Chapter 4 showed that providing negative feedback, asking controlling questions and calling students to account was followed by students' asking questions on what they had to do or by students  complaining. These types of demotivating teaching behaviours thus may provoke students' negative engagement in class. For instance, asking students controlling questions on what they need to know for the test was associated with asking more questions on what they have do for the test, instead of promoting sincere interest in the content of the subject. Overall, our findings complement those of De Meyer et al. (2014) and Van den Berghe et al. (2013) which show that, although demotivating teaching behaviours are not often used, if they occur they can have a significant negative relationship with student engagement in lessons.

With regard to how teachers' use of (de)motivating teaching behaviours related to student engagement within lessons, chapter 3 showed that the lessons with the highest levels of motivating teaching were not necessarily the lessons with the highest levels of engagement. In addition, chapter 4 showed that teachers on occasion started with motivating behaviours and then switched to demotivating teaching behaviours which was associated with positive student engagement. Teachers were also observed to start off with demotivating behaviours and then turn to motivating behaviours which again resulted in positive student engagement. Unexpectedly, not all patterns with motivating teaching behaviour resulted in positive student engagement. In fact, it also quite often resulted in negative student engagement. The other way around we also found patterns of demotivating teaching associated with positive student engagement. These findings correspond to earlier findings of Assor et al. (2002) who suggested that the impact of motivating teaching behaviours is dependent on its relevance within a given context, in other words, it is influenced by situational factors. In our research, we found indications that these situational factors may be the lesson's subject and student behaviour. Out of 12 highly engaging lessons, almost half had a creative subject. It may be that these creative lessons are naturally more engaging for students compared to more generic lessons (e.g., Dutch, English) and that teachers may need less motivating teaching behaviours to keep students engaged (Jang, 2008; Reeve, 2016). In addition, based on the findings in chapter 4 teachers seemed to adjust their behaviour to that of their students: when they did not receive the desired reaction from their students, they switched from motivating to demotivating teaching or vice versa. Furthermore, prior research suggests that within an overall motivating teaching climate, a specific demotivating teaching behaviour may have less of a detrimental impact compared to when it is done in an overall demotivating climate (Aelterman et al., 2014; Assor et al., 2002; Jang, Kim, & Reeve, 2016; Niemiec & Ryan, 2009; Reeve, 2009).

From the perspective of the student as an active agent, the impact of (de)motivating teaching behaviours could also be explained partly by the way students' cope with demotivating teaching behaviours. A reason why we unexpectedly found demotivating teaching behaviour both associated with positive as well as negative engagement could be that students differ in the way the cope with this behaviour in class. In line with Skinner and Edge (2002), who distinguish four different coping skills, students with adaptive coping skills may try to see the value of the request and focus on the positive (i.e. accommodation) or try to reconcile ones interest with the request of the teacher (i.e. negotiation). Those students with maladaptive coping skills could simply give in (i.e. compulsive compliance) or resist (i.e. opposition). A parental study indicated that coping responses can alter effects of demotivating parenting (Flamant et al., 2020). With regard

to education it could be that demotivating teaching behaviour with students with the coping skill oppositional defiance, could mean adding fuel to the fire, escalating in negative interactions. Whereas students with the coping skill accommodation would respond more positively towards the request of their teacher.

This dissertation adds to recent SDT research that has explored the situational dependence of motivating teaching behaviours, showing that the impact of motivating teaching can also be dependent on how this motivating teaching behaviour is expressed, the student–teacher relational context and students' specific needs and coping skills at the time (Aelterman et al., 2019; Assor et al., 2002; Domen, Hornstra, Weijers, Veen, & Peetsma, 2019).

## 5.3 | Reflections on Self Determination Theory

Within chapters 3 and 4, we found that, depending on the context, motivating teaching behaviours were also related to more passive engagement or even to negative student engagement. This indicates that although the label 'motivating' suggests otherwise, these behaviours are not always motivating (or engaging more specifically). Yet by using the concept 'motivating' or 'need supportive', it seems as though the outcome of the teaching behaviour is already enclosed in the concept. How could motivating teaching not be motivating? Motivating teaching is only motivating when it actually results in the motivation or engagement of students. This would call for a more cautious use of these terms by adding that they could potentially be supportive or motivating depending on the social context (Ryan & Deci, 2000) which every individual experiences differently.

With regard to motivating teaching consistent with SDT, we specifically distinguished motivating teaching behaviours to be either autonomy supportive, related to structure or relatedness support. In observing these behaviours in practice, it was difficult to only code the teachers' behaviour on one dimension. For instance, when a teacher provided positive feedback (structure), it was most often combined with empathy and communicated in a kind manner (relatedness support). Or when offering choice (autonomy support), teachers could either do it in a structured and clear way or in a vague and loose way, and each way would trigger very different reactions from students. Thus, although the theoretical spectrum is presented as separate dimensions, concrete teaching behaviours in practice often present a mix of different teaching dimensions. And it is probably the nuanced mix of dimensions that determines the effect it has on students. As prior research has already shown, it is possible that strong positive relations may exist between supporting the three basic needs. Jang et al. (2009) showed that autonomy support and structure covaried and suggested that autonomy support and structure are two interdependent aspects of a teachers' instructional style. Generally high correlations have also been found between individuals' perceptions of the three distinct need support variables (Reinboth et al., 2004; Taylor & Ntoumanis, 2007). Additionally, more recent research findings suggest that a more gradual approach with regards to the dimensions of (de)motivating behaviour are warranted (Aelterman et al., 2019). Aelterman et al. (2019) revealed that in practice some elements of autonomy support can be close to structure while others lean more toward chaos. Whilst structure can be closely related to autonomy support (guidance), other aspects can be more closely related to control. Yet neither of these investigations includes the dimension of relatedness support, which may well reflect the emotional tone in which teachers offer autonomy and structure and thereby moderate a positive or negative impact on student motivation (Sparks et al. 2016). In line with suggestions by Aelterman et al. (2019), it could be that prior research has focussed too much on disentangling the teaching dimensions and finding the one with the strongest predictive power when it should be focussed more on the integration to get a good view of the overall and integrated picture of motivating teaching.

SDT provides a very broad theory on how to foster human motivation and states that social contexts can either support or hinder students' motivation depending on the way they support or thwart students' basic needs (Ryan & Deci, 2000). In the introduction, we discussed that student motivation can be described on a macro-level regarding their future, on a meso-level regarding their motivation for school and reflected on a micro level in the engagement in a particular lesson. Hereby, we focused on studying the role of the teachers in providing motivating teaching to support student motivation and presumably their needs on a micro level. This may suggest that if teachers provide motivating teaching in class, all students will become motivated for school and actively engaged in class. Our predominant focus on the micro level could unintentionally give an overly simplistic picture of the appliance of SDT within educational practice (Ryan & Deci, 2016). However, we also discussed the importance of the (broader) social context. At school, this comprehends more than just the lessons within the classroom. Like student motivation, need support can be offered to students in school at different levels (Pelletier et al., 2002, Pelletier & Sharp, 2009; Ryan & Deci, 2016). At a meso level, schools should provide an overall need supportive climate (e.g., focus on student voice: choice of content and approach to learning). On a macro level, managers and teams need to provide an overall need supportive climate within their track and way of working. Lastly, on a micro level, the teachers can apply motivating teaching behaviours within the classroom.

## 5.4 | Methodological Reflections

The methodological approaches that we have used in this thesis all have their unique contribution to the body of SDT-related research. Within this thesis, with some additions, we applied two quite novel methodological approaches to gain more insight into the relationship between (de)motivating teaching and student motivation on a meso and micro level. Within chapter 2, using only the variable-oriented approach, which is the most common research method within SDT research, might have led to the conclusion that VET-students do not experience any specific motivational challenges as suggested by prior studies that combine the variable-oriented approach with a person-centred approach that allows for investigating the inter-individual variability within students' reasons for studying (Hayenga & Corpus 2010; Ratelle et al., 2007; Vansteenkiste at al., 2009). By adding a person-centred approach, we found that there is in fact a substantial number of VET-students that experience challenges with the quality of their motivation.

With regard to the observations of student engagement, for which we applied an already developed observation tool from Van den Berghe et al. (2013) and Haerens et al. (2013), we chose a different approach. As suggested by Nguyen et al., (2018), we chose to investigate the indicators of student engagement (emotional and behavioural [passive/active]) separately. With this addition, we were able to show that there were distinct differences between teachers' behaviours to support passive/emotional engagement and active student engagement.

Observational research within SDT has thus far made use of instruments based on interval rating in which student engagement and motivating teaching were assessed per interval (e.g., every five minutes) to then calculate global aggregated scales. Although the interval observational instrument is a validated instrument, this observation method has at least two drawbacks. First, it is not possible with this interval rating system to gain insight into the exact frequencies of the specific teaching behaviours that were used and, second, it is less possible to map out what the dynamics in the interactions between teacher and student look like. To analyse this interaction from a more fine-grained micro perspective, we created a second observational tool suitable for event coding. This micro-analytical approach in which every behaviour was coded when it occurred provided a more nuanced picture of teachers' actual teaching behaviour in relation to students' engagement in class than more global interval-rated observation methods. In sum, although the coding work was strenuous and labour intensive, the results of this dissertation show that it pays off to use more fine-grained methodological approaches to do justice to the fact that practice is often more complex and unruly than theory suggests.

The results of this dissertation show that both interval and event coding complement each other in gaining a more complete picture of the quality of the interactions. After a good substantive training, both observation instruments can be used to code motivating teaching behaviours and student engagement. We showed that both observational instruments make a valid registration of motivating teaching behaviour and student engagement. Interval rating makes it possible to gain a more abstract overview of important associations across a larger number of lessons, while event coding is able to explore specific occurrences and temporal dependencies of these behaviours in more detail. For future observational research, it seems useful to apply interval rating to get a good picture of the overall association between lessons and, in addition, apply event coding in lessons that stand out as being very engaging or not at all engaging. This could lead to more concrete recommendations and examples on how teachers apply the behaviour from one situation to the next (Aelterman et al., 2019; Assor et al., 2002; Domen et al., 2019).

In summary, by applying a variety of novel methodological approaches, we gained a more fine-grained insight into the complexity of the use of motivating teaching behaviours to foster student engagement in lessons from an SDT perspective. This fine-grained perspective showed that the relationship between(de)motivating teaching and engagement is not always as one would expect it to be from theory. As unexpectedly we found association between motivating teaching behaviour and negative student engagement and demotivating teaching behaviour and positive student engagement. Therefore, we encourage future research to combine observational research with more fine-grained approaches to further unravel the complex link between (de)motivating teaching and active student engagement. Still, this study has some limitations that need to be considered.

## 5.5 | Limitations and Suggestions for Future Research

Our research methods allowed us to thoroughly analyse the relationship between motivating teaching and student motivation in lessons within the same context of the Graafschap College within the lessons of three teams of teachers at a micro level. A major limitation of our research, however, is that it only included five VET-teams and their students at one VET-college within the Netherlands. Therefore, our findings have limited generalisability to the population of VET-teachers and VET-students as a whole. Future research should expand and recruit larger samples across more schools in different regions/countries as well as different tracks at different levels to determine what aspects of our findings could be related to regional factors.

Further, our design choices of aggregating groups of teachers and groups of students prevented us from drawing any conclusions about the role of individual differences. For instance, within chapter 2, students were asked to rate the motivating teaching of their entire team of teachers, although there could be substantial differences in how motivating they experience each individual teacher. This approach thus disregarded individual differences between teachers. Likewise, students were treated as a group in our observational studies, even though we know that there are substantial differences between students' motivational profiles, the way individual students engage in class (Domen et al., 2019; Hornstra, et al., 2018; Shernoff et al., 2016) and students could have different strategies in coping with their teachers behaviour (Skinner & Edge, 2002). For future research, it would be interesting to create a design that takes these individual differences into account and explores if students from the high quality motivational profile are also actively engaged in class and display more adaptive coping skills.

Relatedly, while we were able to identity patterns of teacher behaviour and student engagement, we were unable to tell whether these interactional patterns occurred within the same teacher student dyad and examine how these interaction patterns evolve over longer periods of time. Findings of Domen et al. (2018) suggest that teachers differentiate in providing need support from one student to the next. Research using teachers and student self-reports also indicates that teacher expectations may cause teachers to provide more need support to some students than to others, thereby affecting student motivation and engagement (Hornstra et al., 2018). For future research, it would thus be interesting to create a design that takes these individual differences into account and explores the effect of motivating teaching on the specific engagement of individual students. This could tell if students that are highly engaged also receive more need support and, in contrast, if students that show more negative engagement receive more need-thwarting teaching behaviours leading to an either positive or negative spiral of behaviours. At the same time, it would also be worthwhile to use event coding to explore if students within different motivational profiles respond differently to (de)motivating teaching behaviours.

Within the SDT research tradition, researchers have predominantly used self-reports to investigate motivating teaching and student motivation or engagement. Our observational studies add valuable insights on the actual behaviours that are used in class to the prior studies that used self-reports in which teachers tend to rate their motivating teaching behaviour and the engagement of their students more positively than do their students (Maulana et al., 2011; Prenzel et al., 2002). Yet observations do not allow for an investigation of teachers' and students' cognitive processes, nor emotional processes related to their behaviour. Research on these cognitive processes, such as teachers' beliefs and preferences on teaching strategies and their expectations and perceptions of their students has shown that these cognitive processes do indeed partly determine the use of motivating teaching (Domen et al., 2018; Hornstra et al., 2015; Hornstra et al., 2018). This could be the same for students; a motivating teaching behaviour could be experienced as such or in a different way leading to either more positive or negative responses. Therefore, it would be interesting to be able to measure the motivation and need satisfaction and need frustration of students related to specific events. Within practice this would be very difficult to explore, yet with a vignette study this could be approached closely whereby students empathize with the vignette and indicate how they would feel (De Meyer et al., 2014; De Meester et al., 2020). Yet, a limitation of these video vignettes is that they are staged. In addition, it could be interesting to discuss the cognitive and emotional processes with students and teachers and explore how they actually experienced the behaviours rated by observers. This could be done by adding a more qualitative approach to the research, such as stimulated recall interviews in which participants reflect on their actual behaviours and the motives behind them by using video-recordings (Radišić & Baucal, 2016).

For future research it would be fruitful to design an approach to research based on macro, meso and micro levels to investigate the entire motivational climates of school (i.e., whole school reform). This would require an interdisciplinary research programme that combines both research from the perspective of education as well as Human Resource Management (HRM) and uses both qualitative and qualitative analyses.
On the macro level, research should investigate the overall motivational climate of the school and explore potential barriers that could prevent staff from working in a need-supportive way. This would also require an investigation of how the current motivational climate supports the basic needs of the staff (Pelletier et al., 2002, Pelletier & Sharp, 2009; Ryan & Deci, 2016). Subsequently, at the level of the track (meso), the curriculum, assessments and lesson plans can be analysed to investigate to what extent they are designed to meet the needs of the students as aspects of powerful learning environments (De Bruijn & Leeman, 2011; Jang, Reeve, & Halusic, 2016; Su & Reeve, 2011). Furthermore, the motivational climate within the team could impact teachers' approaches to teaching on a micro level. Within the micro level of the classroom, research using a more systematic and controlled data collection approach with multilevel analyses could further test the described relations between motivating teaching behaviours (integrating the three dimensions) and different aspects of student engagement. The social context within our research was quite traditional and was organised via a fixed schedule in which teachers provided lessons to classes of students. In less traditional schools that do not provide fixed lessons with one teacher instructing a class, the method of the research needs to be adjusted. In these cases, the unit of analyses is not a lesson but is much more the dyadic interaction between students and their coaches/teachers. Observations of student–teacher interactions with a more qualitative research design could add information on students' and teachers' underlying motives with regards to the behaviours they show (Radišić & Baucal, 2016). Such an integrative research approach would provide very valuable insights in applying SDT to investigate the social context of schools, identifying both factors that support and hinder student motivation on the macro, meso and micro level.

## 5.6 | Practical Implications

An important goal of this dissertation was to provide recommendations to VET-teachers and colleges to foster student engagement within lessons. Prior research has suggested that changes at the micro level, such as higher levels of and a greater variety of motivating teaching, will make a more profound impact on student motivation and engagement if the conditions of the school as a social context are aligned accordingly (Ryan & Deci, 2016). Therefore, as discussed in our suggestions for future research, the micro level should not be discussed independent of the meso and the macro level. We will therefore first discuss the practical implications for teachers and teacher professionalisation on a micro level based on findings per research aim. Second, we expand these implications to make recommendations on creating optimal conditions in which the required changes at the micro level could reach their full potential. We will provide recommendations within the current structure of vocational colleges but also make suggestions that require colleges to step outside the way they are currently organised. Overall, the findings in our research may prove to be valuable insights for VET-teachers, their professionalisation and VET-colleges.

### 5.6.1 VET-students' Motivation for School and their Engagement in Lessons

The results of this dissertation show that VET-teachers are teaching a substantially large group of students with a less optimal motivational profile who predominantly puts effort into school out of pressured reasons and who experience higher test anxiety and lower self-efficacy. Anxiety and low self-efficacy may undermine students' feelings of being competent enough to take charge of their learning process and may make them struggle when autonomy is provided. Providing students with additional support to feel more competent in lessons could help them to take charge. In other words, have a little faith and don't 'take over'. For teachers, becoming aware of students' anxiety and low self-efficacy could help them to empathise with their students. According to Elffers (2011), teachers can try to understand students' educational history and talk about it, which could help students to break out of the vicious cycle of disengagement.

### 5.6.2 Teachers' use of (De)motivating Teaching Behaviours within Lessons

Our results showed that there are quite distinct differences in the specific motivating teaching behaviours VET-teachers prefer to use. Teachers were frequently observed to use inviting language (autonomy support), to ask questions, to provide clear verbal instructions, to call students to account, to address students by their first name (structure) and mostly to invest in a mutually positive relationship with their students. To a much lesser extent, teachers were observed to provide students with other specifically

autonomy supportive and structuring strategies. Behaviours that were observed much less frequently with regard to autonomy support were providing choice, differentiation, participation in the lesson content, room for experimentation and the encouragement of independent problem solving and active contributions. With regard to structure, teachers were observed to less frequently provide their students with positive feedback, rationales and variation, to use their students as positive role models or to offer students new guidelines, tips and advice.

In summary, our results indicate that VET-teachers seem to prefer the use of motivating teaching behaviours that focus on relatedness support, providing classroom instruction and maintaining classroom management, As such, these results offer relevant insights for teacher professionalisation and the design of interventions. The results of our research specifically suggest that strategies that invite students to actively contribute to the lesson were beneficial, specifically in fostering their students' active engagement within lessons. Therefore, expanding teachers' use of different motivating teaching behaviours could be a fruitful avenue to foster students' engagement. Namely, interventions that focus on supporting teachers use of motivating teaching to engage students more actively to contribute to the lessons, such as guiding them with just in-time instruction, allowing room for experimenting, providing feedback and rationales. Our research also showed that there are large individual differences in the use of motivating teaching behaviours from one teacher to the next; thus, it seems important to tailor interventions per individual teacher.

### 5.6.3 (De)motivating Teaching Behaviours related to Motivation and Engagement within Lessons

At the start of the lessons, teachers can engage students and evoke their own initiative by being enthusiastic while asking questions in combination with providing a clear rationale. To further support student engagement, teachers can provide students with assignments early on in which students can learn by doing, while providing room for experimentation, offering support, and not rushing towards the end of the lesson. During lessons, teachers can engage their students by providing them with choices, guiding them while working, allowing them to experiment and providing them with positive feedback. Providing positive feedback seemed of particular importance for students' active and positive engagement while negative feedback was negatively associated with students' engagement in class. In this way, lessons should become more of a joint effort instead of authoritative classical instruction (De Bruijn & Leeman, 2011). With such a student-centred approach towards teaching, teachers support their students on their way to take charge of their own learning process (Stroet et al., 2015).

Next to working from a student-centred approach whilst using a variety of motivating teaching behaviours to activate students, the results of this study show an urgent need for flexibility. Our research shows that different motivating behaviours can be beneficial throughout lessons to support students' active engagement. Yet it also implies that the impact of these behaviours is dependent on the context (Assor et al., 2002). At the risk of disappointing a great number of teachers, there does not seem to be a recipe for creating *the* motivating lesson. We found some very important ingredients that can help, but what makes it complex is that the recipe is different every lesson, depending on multiple situational factors. In a class with students with an interest in creative subjects, a teacher may need less and different motivating teaching behaviours than in a class with a lot of students with an utter dislike of creative subjects. Therefore, a practical implication of this research is that teachers need to be flexible in their use of motivating teaching behaviours and not get discouraged if a well-designed attempt misses its target. One way of getting students involved may even be to discuss this with students and explore together what works. This requires teachers to shift from a role as the authority in the lessons towards a more coaching approach, guiding their students in dialogue with each other (De Bruijn & Leeman, 2011).

Multiple studies have shown that interventions using video recording in training teachers in using motivating teaching behaviours have a positive impact on the engagement of their students (Su & Reeve, 2011). The tools used in this research, such as student motivational profiles and the observational instruments, can be of use for teachers to reflect on their students' specific quality of motivation and their use of (de) motivating teaching behaviours in class. Specifically, reflecting on videos of their own or each other's lessons may be a promising way to observe actual behaviours in class and identify concrete possibilities to further foster their students' active engagement and tailor necessary interventions accordingly (Hatch & Grossman, 2009; Pennings et al., 2014; Weber et al., 2018; Rosaen et al., 2008). Reflecting on their own lessons may raise more awareness in their actual use of motivating teaching behaviours in class, while observing each other's lessons could be an important form of peer learning in which different teachers can exchange promising ways to further engage students within their lessons. This is even more effective when combined with guidance from an expert (Weber et al., 2018). Specifically, as teachers are mostly embedded within teams that together provide the education in their classes, a focus on team professionalisation with a united approach toward motivating teaching could be highly beneficial for students.

In addition to a focus on their way of teaching, providing a motivating climate also requires teams of teachers to re-evaluate the curriculum, lesson plans and eventually the way of testing. Currently among VET-colleges, there are a variety of initiatives in which management and teachers are exploring promising ways to allow students to design their own learning process by making their own personal choices with regard to their curriculum. In VET, a lot of these initiatives are focussed on personalised learning, which was introduced in the United Kingdom as the intended way of learning to provide high-quality education based on a thorough understanding of each student's needs and motivation in line with SDT (Sebba et al., 2007; Spencer, 2014). Personalised learning should not be conceived as individualistic or soloist learning but rather should be embedded within the social context of learning (Volman, 2019). There is no blueprint for the implementation of personalised learning aligned with SDT, and each school and teacher team should discuss with their stakeholders (e.g., students, labour market) what shape and degree of personalised learning is most suitable for them. An example of personalised learning in the Dutch VET context is Ixperium which constitutes laboratories for learning and teaching with ICT in which educational professionals, students, teacher educators and researchers together discover and develop possibilities for using ICT in education.

In addition, steps are being taken by colleges for vocational education to change the current focus on summative testing. The current focus on summative testing could potentially be a maintaining and precipitating factor of controlled motivation (Krijgsman et al., 2017). Instead, more motivating ways of testing with a stronger focus on students' own development (formative assessment) could increase the belief students have in themselves and reduce their test anxiety, further fostering their autonomous motivation (Dubeau et al., 2017).

With design-based research, teachers could also take on an active role in designing solutions for practices that seem to hinder student motivation at school, redesigning the curriculum or experimenting with other assessments along the line of SDT (The Design-Based Research Collective, 2003). For instance, based on SDT, a teacher can redesign the lesson plan of a course and investigate the effect on student motivation as compared to the prior traditional approach. Design-based research could provide teachers with more evidence-driven concrete examples of the practical application of SDT.

### 5.6.4 Creating an Optimal Context for Changes on the Micro Level within the Current Structure

On a micro level, a united focus by teams of teachers qualified in the application of motivating teaching could definitely make an impact on student motivation.This impact is significantly increased when the social context of the school offers the necessary space and meets the basic needs of teachers on the meso and macro levels (Pelletier et al., 2002, Pelletier & Sharp, 2009; Ryan & Deci, 2016). In the context of VET, there are concerns that characteristics of the VET context could be a barrier in providing motivating teaching. A first relevant characteristic of the VET context is that school definitions of quality of education are highly influenced by the Inspectorate's definition and interpretation of quality (Bronnemans-Helmers, 2011; Van de Venne, Honingh, & van Genugten, 2017). Schools and teachers are held accountable for external standards with regards to student performance, such as student pass rates, diplomas and drop-out rates. A second relevant characteristic is a heavy workload among teachers (Badouri, Poortvliet, & Sikkes, 2015). In an explorative study on workload with 973 VET-teachers, 74.3% of the teachers rated their work pressure at an eight or higher on a ten-point scale (Effectory, 2016; Toly, Groot, & Klaeijsen, 2017). As a consequence of this workload, more than 80% of teachers indicate that this heavy workload jeopardises the quality of their teaching (e.g., attention for students, innovation and adequate preparation of lessons). This could mean that the VET-context cultivates a certain form of teaching, one that ensures that students meet the standards regardless of their motivation, development and interests, thus undermining student engagement in class (Pelletier et al.,2002; Pelletier &Sharp, 2009).
At their base, VET-colleges seemed to have passively adopted the Inspectorate's ideas of good quality of education and base their decisions on education, school organisation and pedagogy on performance indicators (Van de Venne et al., 2017). Instead schools could actively and continuously discuss their own concept of good education together with their stakeholders (van de Venne et al., 2017). A focus on the creation of a culture in which managers and teachers are supported in taking on responsibility (active engagement) may result in greater and more lasting improvements than does a hierarchical top-down culture based on command and control (van de Venne et al., 2017). Van de Venne et al. (2017) have further advocated a shift towards soft control with a focus on shared information and knowledge, open discussion of issues, the provision of help to each other, the formulation of a shared mission, and acceptance of responsibility for individual and team behaviour. From this perspective, they have stated that managers, teachers and other stakeholders in colleges need to discuss the outcomes of educational processes with policymakers and decision makers.

### 5.6.5 Horizons for Whole School Reform

Taking it a step further and providing an integrated approach that embraces the principles of SDT, in the Netherlands Agora schools (secondary education) are centering their education completely around the students. These are schools that work with a very heterogeneous student population on various cognitive levels (Claessen, 2019). In contrast with more traditional schools, they don't have:

- lessons or timetables
- subjects or teaching methods
- grades or achievement reports
- traditional school levels
- the requirement of sitting down
- the traditional system of teaching
- the hierarchical organisation of director, deputy director, team leader and so on.

Together with their coaches, students work on self-chosen challenges; coaches guide steady groups of about 15–17 students on their challenges day-in and day-out. Although research into differences between student outcomes at Agora compared to more traditional schools is still in its infancy, students are required to pass the same state exams to finish secondary school. The first round of exams showed that Agora students were well prepared and most of them passed (Claessen, 2019). Agora is working closely with the Inspectorate and indicates that, although they would like even more autonomy with regards to the educational regulations, there are more possibilities for schools to make autonomous decisions than originally thought. For VET-colleges, this could prove to be a promising way to create their own vision on good quality of education by engaging managers, teachers and students and establishing an overall motivating climate in school from a macro to meso to micro level.

## 5.7 | Concluding Thoughts

With a fine-grained research approach, we shed more light on the complexity of VET-students' motivational challenges in relation to teachers use of (de)motivating teaching behaviours. Although VET-student motivational profiles were diverse, there was a relatively large group of students who predominantly felt obligated to study. Observations displayed similar results, with students predominantly attending lessons without being actively engaged. All three studies within this dissertation showed that the use of motivating teaching behaviour is beneficial to foster student motivation for school and student engagement within specific lessons. The results further showed that if teachers want students to actively engage in class, they need to start using a wider variety of motivating teaching behaviours. Specifically, positive feedback, room for expe-

rimentation, the offer of support and guidance while students work on exercises and ask questions are promising behaviours in supporting active student engagement. This requires teachers to adopt a more student-centred approach and focus on self-determined learning by their students with flexible use of motivating teaching behaviours depending on the context and situation.



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# Nederlandse samenvatting



Het middelbaar beroepsonderwijs (mbo) bereidt studenten voor op de arbeidsmarkt en biedt de mogelijkheid om door te stromen naar het hoger onderwijs. Ondanks het belang van het mbo voor de arbeidsmarkt lijken mbo-studenten over de hele wereld moeite hebben om gemotiveerd te blijven voor hun opleiding. Dit kan de kansen van studenten bij het succesvol opbouwen van hun loopbaan ernstig beïnvloeden. Op de korte termijn kan slechte motivatie voor school leiden tot een laag zelfbeeld, het niet benutten van talenten, spijbelen en voortijdig schoolverlaten. Op de lange termijn zijn er risico's zoals werkloosheid en criminaliteit.

De Inspectie van het Onderwijs waarschuwt dat de motivatie van Nederlandse studenten afneemt. Dit is gesignaleerd in alle vormen van onderwijs en heeft een aantoonbaar effect op de schoolprestaties. Een slechte motivatie leidt in het ergste geval tot voortijdig schoolverlaten. Jaarlijks verlaten 27.950 studenten het onderwijs zonder een startkwalificatie. In Nederland kent het mbo het hoogste percentage voortijdig schoolverlaters. Van alle studenten die uitvallen is 80% mbo-student. Ongeveer de helft van de studenten die afhaken, doet dat in het eerste jaar. Naast het voortijdig schoolverlaten wisselen mbo-studenten vaak van opleiding. Dit kan eveneens een gevolg zijn van een lage motivatie voor de gekozen opleiding. Wat betreft de motivatie van studenten in het eerste jaar, begint volgens onderzoek een aanzienlijk aantal studenten met een lage motivatie en gaan ze voornamelijk naar school omdat ze moeten. Er is een dringende behoefte van scholen en docenten om de motivatie van hun studenten te bevorderen.

In de tweejaarlijkse landelijke JOB-monitor ter evaluatie van het mbo-onderwijs geven mbo-studenten zelf al jaren achtereen aan dat een substantieel deel van hun lessen niet motiverend te vinden. Daarnaast wijst onderzoek naar alternatieve onderwijsprogramma's bij studenten met een risico op uitval uit, dat studenten actief betrekken bij de lessen een veelbelovende manier is om de algemene motivatie van studenten voor school te bevorderen. Factoren die helpen om de betrokkenheid van studenten bij lessen te vergroten, zijn een goede relatie met docenten, een duidelijke structuur in de lessen, de focus op persoonlijke ontwikkeling en studenten de controle geven over hun eigen leerproces. Verder heeft onderzoek aangetoond dat de manier waarop docenten omgaan met hun studenten tijdens de lessen een belangrijke rol speelt bij het bevorderen van de betrokkenheid van studenten in de les.

Deze sleutelrol van docenten bij het motiveren van studenten wordt ook ondersteund door een overvloed aan onderzoek geïnspireerd door de zelfdeterminatietheorie van Ryan en Deci (2000). Onderzoek gebaseerd op deze theorie laat zien dat docenten de motivatie van hun studenten kunnen bevorderen met motiverend lesgeven. Er is echter slechts beperkt onderzoek beschikbaar dat zich richt op hoe specifiek docenten motiverend lesgeven en hoe dit vervolgens gerelateerd is aan de betrokkenheid van studenten bij de les. Om een beter inzicht te krijgen in het (micro)gedrag van docenten tijdens lessen, de mate waarin dit gedrag varieert binnen en tussen lessen en hoe docenten hiermee de betrokkenheid van studenten beïnvloeden, is observationeel onderzoek noodzakelijk. Dit promotieproject is geïnitieerd door het Graafschap College met als doel de dagelijkse onderwijspraktijken wetenschappelijk te onderzoeken en manieren te verkennen om de motivatie van studenten voor school en de betrokkenheid van studenten bij lessen te bevorderen.

**Theoretisch kader: Zelfdeterminatietheorie (ZDT)**
Een belangrijke ambitie van het mbo is om beroepsspecialisten op te leiden die zich, na het behalen van hun diploma, proactief blijven ontwikkelen binnen hun vakgebied. ZDT beschrijft dat mensen in essentie nieuwsgierig zijn, ernaar streven om nieuwe vaardigheden te leren en hun talenten toe te passen. De praktijk leert echter dat de studenten deze proactieve houding ten opzichte van leren niet altijd laten zien op school en in de les. ZDT geeft aan dat de sociale omgeving de motivatie kan bevorderen of belemmeren. Gezien de problemen die mbo-studenten ervaren met betrekking tot hun motivatie, kan het zo zijn dat de sociale context op school belangrijke factoren bevat die hun proactieve houding ten opzichte van leren en ontwikkelen belemmeren. Met betrekking tot school kunnen verschillende niveaus onderscheiden worden in de motivatie van studenten. Op macroniveau hangt de motivatie van studenten met name samen met hun toekomstbeeld na diplomering en het beroep waarin ze aan de slag willen. Op mesoniveau hebben studenten een bepaalde motivatie om naar school te gaan en op microniveau hebben studenten een bepaalde motivatie voor het deelnemen aan de les.

Volgens ZDT wordt de motivatie van studenten om zich proactief te blijven ontwikkelen bevorderd wanneer de school erin slaagt de drie psychologische basisbehoeften van studenten te ondersteunen. Deze drie psychologische basisbehoeften zijn autonomie (de vrijheid om jezelf te zijn), competentie (je in staat voelen om te handelen) en verbondenheid (nauwe banden ervaren; Ryan & Deci, 2000a, 2000b). Door een pedagogisch klimaat te bieden dat de behoeften van studenten ondersteunt, kunnen scholen en docenten de motivatie van studenten bevorderen. In tegenstelling, kan het niet voldoen aan deze basisbehoeften de motivatie van studenten ondermijnen.

Binnen de sociale context van school, hebben docenten op micro niveau een belangrijke rol bij het creëren van een ondersteunend klasklimaat. Door het bieden van *autonomie-ondersteuning* kunnen studenten hun betrokkenheid in de les ervaren als een zelfgekozen handeling die hun eigen interesses, voorkeuren en waarden weerspiegelt. Docenten kunnen de autonomie van studenten ondersteunen door zinvolle keuzes te bieden, studenten het initiatief laten nemen en ruimte te geven om te experimenteren. Verder kunnen docenten de behoefte aan competentie ondersteunen door het bieden van *structuur.* Het bieden van structuur versterkt het geloof van studenten in hun eigen kunnen (hun effectiviteit) en de overtuiging dat ze de taak kunnen uitvoeren. Docenten kunnen studenten structuur bieden door middel van; duidelijke communicatie van verwachtingen, het bieden van ondersteuning tijdens het werken aan opdrachten en het geven van constructieve feedback. Tenslotte kunnen docenten aan de behoefte van verbondenheid voldoen door *betrokkenheid* te tonen met de studenten en een wederzijds positieve relatie met hun studenten op te bouwen. Dit kan bijvoorbeeld door in de les hun betrokkenheid te tonen met enthousiasme, zich te leven in studenten (empathie) en aandacht te hebben voor studenten Samenvattend bestaat motiverend lesgeven uit het bieden van autonomie-ondersteuning, structuur en het creëren van verbondenheid.

In tegenstelling tot motiverend lesgeven kunnen docenten ook demotiverend lesgeven. De bevrediging van de autonomie van studenten wordt ondermijnd door sterk *controlerend* les te geven en studenten onder druk te zetten om op specifieke manieren te handelen, denken of voelen. In de klas doet een docent dit bijvoorbeeld door studenten onder druk te zetten met straffen, schreeuwen, intimideren en het aanbieden van voorwaardelijke beloningen, of het opwekken van schuldgevoelens, schaamte en angstgevoelens. Het creëren van *chaos* belemmert de bevrediging van de behoefte van studenten om zich competent te voelen, vanwege gebrek aan structuur in de les. In de les vertaalt zich dat bijvoorbeeld naar het ontbreken van duidelijke doelen, een gebrek aan informatie over hoe doelen bereikt kunnen worden en onduidelijke feedback. Tot slot heeft een *koude* benadering ten opzichte van studenten een negatief effect op de bevrediging van hun behoefte aan verbondenheid (onvriendelijk zijn of studenten afwijzen of uitsluiten). In de les wordt een koude benadering gekenmerkt door het afwijzen en uitsluiten van studenten, een onvriendelijke houding of te weinig aandacht besteden aan studenten. Demotiverend lesgeven bestaat dus uit controle, chaos en een koude benadering ten opzichte van studenten.

De ZDT onderscheidt verschillende vormen van motivatie: autonome motivatie (motivatie van hoge kwaliteit: mensen willen activiteiten ondernemen) en gecontroleerde motivatie (motivatie van lage kwaliteit: mensen voelen zich onder druk gezet om activiteiten te ondernemen). Vanuit ZDT is het met name van belang de autonome motivatie van studenten te bevorderen. Als je iets zelf graag wil, doe je het met meer energie en plezier dan als je je gedwongen voelt iets te doen. In lessen is het echter niet mogelijk om de redenen van studenten om deel te nemen aan de les te observeren, aangezien dit meestal een cognitief proces is. Wat wel geobserveerd kan worden is het concrete gedrag in relatie tot hun betrokkenheid bij de les. Volgens ZDT geeft studentbetrokkenheid de onderliggende kwaliteit van de motivatie van studenten weer. Omdat we de motivatie van studenten met name op micro niveau in de les wilden bekijken hebben we de betrokkenheid van studenten in de les geobserveerd.

Binnen ZDT hebben talrijke onderzoeken aangetoond dat autonome motivatie en betrokkenheid van studenten bij de les verband houdt met positieve leerresultaten, zoals lage uitvalpercentages, doorzettingsvermogen en hogere academische prestaties. Gecontroleerde motivatie daarentegen voorspelt negatieve resultaten, zoals schooluitval en lage schoolprestaties. Verder geeft onderzoek aan dat studenten met een autonome motivatie vaker positief betrokken zijn in de les waar studenten met een meer gecontroleerde motivatie vaker negatief gedrag vertonen in lessen. Met betrekking tot studentbetrokkenheid worden over het algemeen drie aspecten onderscheiden:

(1) De emotionele betrokkenheid van studenten (gevoelens). Een student is emotioneel betrokken als hij of zij enthousiast is over de les.
(2) De cognitieve betrokkenheid van studenten (mentale inspanning). Cognitief betrokken studenten begrijpen het belang van hun opleiding en zetten zich hier voor in. Ze formuleren bijvoorbeeld hun eigen leerdoelen.
(3) Gedragsmatige betrokkenheid (concreet observeerbare gedrag in de les). Dit kan variëren van meer passief gedrag (bijvoorbeeld: opletten in de klas) tot actiever studentgedrag (bijvoorbeeld: vragen stellen of initiatief nemen).

Met betrekking tot de relatie tussen motiverend lesgeven en de motivatie en betrokkenheid van studenten blijkt uit talrijke onderzoeken dat motiverend lesgeven de autonome motivatie en betrokkenheid van studenten bevordert. Aan de andere kant is in een aantal onderzoeken aangetoond dat demotiverend onderwijs resulteert in gecon-

troleerde motivatie of een negatieve betrokkenheid van studenten in de les. Binnen de ZDT onderzoekstraditie zijn veel uitkomsten gebaseerd op het gebruik van vragenlijsten. Binnen deze traditie is vooral gekeken naar motiverend lesgeven als een stabiele eigenschap van de docent en niet zozeer naar de specifieke toepassing van motiverend gedrag in de les. Meer recent onderzoek maakt ook gebruik van lessenobservaties om de toepassing van motiverend lesgeven in de les gedetailleerde te onderzoeken. Uit deze onderzoeken blijkt dat naast een meer stabiele eigenschap van de docent, de toepassing van motiverend gedrag net als de betrokkenheid van studenten in de les kan variëren van moment tot moment, afhankelijk van contextfactoren zoals bijvoorbeeld hoge werkdruk, student en docent gedrag (interactie) of het onderwerp van de les.

**Reflecties op bestaand ZDT onderzoek**
Hoewel er veel onderzoek is dat aantoont dat motiverend lesgeven de autonome motivatie en betrokkenheid van studenten bevordert, is er minder inzicht in het specifieke gedrag van docenten in de les in relatie tot de motivatie en betrokkenheid van studenten en hoe dit eventueel varieert van moment tot moment. Met name in de context van het mbo is nog weinig onderzoek gedaan naar de kwaliteit van de motivatie van studenten en hun specifieke betrokkenheid in de les. Verder wordt motiverend lesgeven in de meeste onderzoeken onderzocht met behulp van geaggregeerde schalen over intervallen binnen lessen (bijvoorbeeld een score per 5 minuten). Hierbij heeft het meeste onderzoek zich gericht op de relaties tussen slechts één of enkele dimensies van (de)motiverend docentgedrag en een aspect van studentbetrokkenheid. Het gebruik van geaggregeerde schalen in eerder observationeel onderzoek geeft niet specifiek aan hoe de toepassing van motiverend docentgedrag varieert binnen lessen, welk (de)motiverend gedrag docenten vaak of bijna niet toepassen en hoe dit gedrag verband houdt met verschillende aspecten van studentbetrokkenheid. Tenslotte is tot op heden docent- en studentgedrag onderzocht alsof ze los van elkaar staan. Echter docenten zijn binnen de lessen in continue interactie met hun studenten. Docenten en studenten reageren op elkaars gedrag in de klas en in de klas en zullen ze – in positieve of negatieve zin – hun eigen gedrag aanpassen aan dat van de ander.

**Doel & methode van het onderzoek**
Het gebruik van een meer verfijnde onderzoeksmethode zou een veelbelovende manier kunnen zijn om een meer gedetailleerde beschrijving te geven van het gebruik van de specifieke toepassing van motiverend docentgedrag in relatie tot verschillende aspecten van studentenbetrokkenheid. Om verder te bouwen op bestaand onderzoek, hebben we de volgende doelen op gesteld binnen dit onderzoek, het onderzoeken van:

(1) de kwaliteit van de motivatie van mbo-studenten voor school en hun betrokkenheid bij lessen
(2) de specifieke toepassing van (de)motiverend gedrag van docenten in lessen de relatie tussen (de)motiverend docentgedrag enerzijds en de motivatie en betrokkenheid binnen lessen anderzijds.

De eerste studie, beschreven in hoofdstuk 2, richtte zich voornamelijk op de kwaliteit van de motivatie van mbo-studenten voor school in het algemeen (mesoniveau) in relatie tot testangst, geloof in eigen kunnen en de mate van motiverend lesgeven van hun docenten. Hierbij was ons doel om te onderzoeken of specifieke groepen studenten (profielen) geïdentificeerd konden worden die worstelden met hun motivatie voor school. De motivatie van mbo-studenten voor hun opleiding werd onderzocht aan de hand van zelfrapportages van 195 studenten.

De studie in hoofdstuk 3 onderzocht verschillende indicatoren van de betrokkenheid van studenten in de les in relatie tot (de)motiverend lesgeven aan de hand van observaties in lessen. In deze studie werd het geobserveerde (de)motiverend docentgedrag vergeleken in lessen met een hoge of lage betrokkenheid van studenten. We codeerden 145 opgenomen lessen met een observatie instrument dat is ontworpen om (de)motiverend lesgedrag in lessen lichamelijke opvoeding te observeren (Haerens et al., 2013; Van den Berghe et al., 2013). Elke 5 minuten werden (de)motiverende gedragingen en vijf indicatoren van studentbetrokkenheid beoordeeld door getrainde observatoren. Zo konden we nagaan welke docentgedragingen samenhingen met meer studentbetrokkenheid. Bovendien hebben we op basis van de gemiddelde betrokkenheid de lessen met de hoogste betrokkenheid (10%) en de lessen met de laagste betrokkenheid (10%) van studenten geselecteerd voor aanvullende analyses. Op deze manier konden we het specifieke (de)motiverende gedrag en het verloop daarvan over de les tussen lessen met een hoge en lage betrokkenheid vergelijken.

De laatste studie in hoofdstuk 4 onderzocht met name de situationele afhankelijkheid van (de)motiverend lesgeven en betrokkenheid van studenten binnen student-docent interacties aan de hand van een micro-analytische benadering. Hiervoor is een observatie-instrument ontwikkeld op basis van event-codering. Event-coding omvat het coderen van specifiek gedrag van de leraar of studenten op het exacte moment dat het plaatsvindt. Dit instrument maakte het mogelijk patronen te onderzoeken in de frequentie en de variatie van relevant docent- en studentgedrag. Van de in totaal 145 op video opgenomen lessen, zijn de eerste opgenomen lessen per docent geselecteerd. In deze 52 lessen zijn in totaal 5.388 docent- en studentgedragingen gecodeerd.

**Belangrijkste resultaten en conclusies**
De resultaten van dit onderzoek laten zien dat motiverend lesgeven een belangrijke rol kan spelen in het bevorderen van de motivatie en de betrokkenheid van mbo-studenten. Gebaseerd op de bevindingen van hoofdstuk 2 tot en met 4 worden een aantal centrale bevindingen bediscussieerd in hoofdstuk 5. Met betrekking tot de 3 onderzoeksdoelen kunnen we het volgende concluderen op basis van de drie studies:

*(1) De kwaliteit van motivatie van mbo-studenten voor school en hun betrokkenheid bij de les*
In hoofdstuk 2 lieten de analyses op basis van de gemiddelden zien dat de studenten redelijk boven gemiddelde niveaus rapporteerden van autonome motivatie en gemiddelde niveaus van gecontroleerde motivatie. De persoonsgerichte benadering liet echter zien dat de grootste groep studenten in het profiel zat dat gekenmerkt werd door een lage kwaliteit van motivatie. Deze studenten zagen hun docenten als minder autonomie-ondersteunend, structuur biedend en betrokken. Ze hadden minder geloof in eigen kunnen en het hoogste niveau van testangst in vergelijking met het hoge kwaliteit profiel, de meest optimale cluster. Dit suggereert dat er inderdaad een grote groep is binnen het mbo die speciale aandacht nodig heeft om hun behoeften in autonomie, structuur en betrokkenheid te ondersteunen.

Met betrekking tot de betrokkenheid van studenten in de les zagen we in hoofdstuk 3 dat de studenten de lessen leuk vonden (emotionele betrokkenheid) en hun aandacht bij de les hadden (passieve gedragsmatige betrokkenheid). Met betrekking tot de actieve gedragsbetrokkenheid van studenten zagen we in hoofdstuk 4 dat studenten vooral vragen stelden in de lessen en moeite deden voor hun opdrachten. Hoewel regelmatig werd geobserveerd dat studenten vragen stelden, werden meer proactieve vormen van betrokkenheid (bijv. actief bijdragen aan de les, initiatief nemen) veel minder geobserveerd.

In conclusie, versterken de resultaten van de drie studies elkaar door aan te tonen dat een substantiële groep mbo-studenten moeite heeft met hun motivatie zowel in hun motivatie voor school (meso niveau) als in hun (actieve) betrokkenheid bij lessen. Verder geven onze resultaten aan dat de uitdaging voor docenten specifiek lijkt te liggen in het stimuleren van de *actieve* betrokkenheid van mbo-studenten. Deze blijft achter bij de passieve betrokkenheid van studenten bij de les.

*(2) Het gebruik van motiverend lesgeven door docenten in de les*
Uit de resultaten van hoofdstuk 3 bleek dat binnen lessen docenten met name overwegend hoge niveaus van betrokkenheid met hun studenten (bijv. aandacht voor wat studenten zeggen, enthousiasme, fysieke nabijheid) lieten zien. Docenten hielden zich in veel mindere mate bezig met het bieden van autonomie-ondersteuning of structuur. Verder zagen we in hoofdstuk 3 en 4 dat docenten op het gebied van autonomie-ondersteuning voornamelijk uitnodigende taal gebruikten en veel vragen stelden. Autonomie-ondersteunend gedrag om hun studenten te activeren, zoals keuzemogelijkheden bieden, experimenteren, onafhankelijke probleemoplossing aanmoedigen of een zinvolle uitleg geven, werden in veel mindere mate toegepast in de les. Met betrekking tot het bieden van structuur gaven docenten meestal duidelijke instructies en controleerden ze of studenten zich aan de instructies hielden. Het geven van positieve feedback of het bieden van ondersteuning tijdens opdrachten werden in mindere mate geobserveerd. Tot slot werden het bieden van variatie, het demonstreren door de docent of het gebruik van de student als positief rolmodel nauwelijks geobserveerd.

Samenvattend lijken docenten binnen de lessen een voorkeur te hebben voor het gebruik van motiverend gedrag met een focus op betrokkenheid, klassikale instructie en klassenmanagement en veel minder op het actief betrekken van studenten om bij te dragen aan de lessen. Er lijkt ruimte te zijn voor het toepassen van een gevarieerder aanbod aan motiverend docent gedrag.

*(3) De relatie tussen (de)motiverend lesgeven en studentbetrokkenheid*
De resultaten van hoofdstuk 2 lieten zien dat de autonome motivatie voor de opleiding (meso niveau) positief geassocieerd was met de door studenten ervaren autonomie-ondersteuning, structuur en betrokkenheid van hun docenten. Studenten in het profiel met lagere kwaliteit van motivatie, rapporteerden lagere niveaus van ervaren motiverend lesgeven. Hoewel deze studenten een uitdaging kunnen vormen voor docenten, kan aanvullende ondersteuning voor de betrokkenheid van deze studenten bij lessen (microniveau) een veelbelovende manier zijn om hun motivatie voor school in het algemeen (mesoniveau) te bevorderen.



Met betrekking tot de relatie tussen de motivatie van studenten op microniveau (d.w.z. hun betrokkenheid in lessen) lieten de resultaten van hoofdstuk 3 zien dat verschillende motiverende gedragingen verband hielden met verschillende indicatoren van de passieve, emotionele of gedragsmatige betrokkenheid van studenten. Het bieden van ruimte om te experimenteren was bijvoorbeeld vooral gunstig voor de actieve betrokkenheid van studenten. Verder toonden de resultaten aan dat met betrekking tot de passieve en emotionele betrokkenheid het gebruik van uitnodigende taal (autonomie-ondersteuning) en het tonen van betrokkenheid belangrijk waren.

Omgekeerd bleken verschillende demotiverende gedragingen negatief gerelateerd te zijn aan indicatoren van studentbetrokkenheid. Met name controlerend gedrag was negatief geassocieerd met de emotionele en passieve betrokkenheid van studenten, terwijl chaos een negatieve verband liet zien met de actieve betrokkenheid van studenten. Verder waren er duidelijke verschillen in het gebruik van (de)motiverend onderwijsgedrag door docenten tijdens lessen met een hoge of lage betrokkenheid. Docenten in lessen met een hoge mate van studentenbetrokkenheid begonnen de les doorgaans met een hoger niveau van enthousiasme en betrokken hun studenten na 15 minuten actief bij activiteiten. Bovendien boden ze meer ondersteuning en gaven ruimte om te experimenteren.

De resultaten van hoofdstuk 3 worden versterkt hoofdstuk 4 die liet zien dat positieve feedback, het bieden van autonomieondersteuning tijdens oefeningen en het bieden van keuze, samenhangen met positieve studentenbetrokkenheid. Een combinatie van het stellen van een autonomie-ondersteunende vraag en het geven van een zinvolle uitleg aan de student hield verband met het eigen initiatief van studenten in de les.

In conclusie, voor actieve betrokkenheid van studenten lijken met name de minst geobserveerde autonomie-ondersteunende en structurerende strategieën belangrijk te zijn. Met name het bieden van keuze, ruimte bieden om dingen uit te proberen en fouten te maken (autonomieondersteuning) en nieuwe tips, richtlijnen en ondersteuning tijdens het werken aan opdrachten en positieve feedback (structuur) zijn belangrijk voor het actief betrekken van studenten in de les. Gezien het belang van dit gedrag voor de actieve betrokkenheid van studenten is het opvallend dat docenten weinig gebruik maakten van deze strategieën. De resultaten van dit onderzoek laten zien dat het stellen van motiverende vragen, het geven van positieve feedback en ondersteuning tijdens oefeningen een positief verband had met de betrokkenheid van studenten. Onverwacht waren er ook enkele demotiverende gedragingen, zoals het verwijzen naar de toets, die soms ook bleken te resulteren in een positieve betrokkenheid van studenten. Kortom, de resultaten van deze studie pleiten voor het gebruik van motiverend lesgeven. Echter, niet alle gevallen van motiverend lesgeven leiden automatisch tot positieve betrokkenheid van studenten. De impact van het motiverend lesgeven op de betrokkenheid van studenten kan verschillend zijn per situatie en is deels afhankelijk van de desbetreffende context.

**Beperkingen en suggesties voor vervolgonderzoek**
Door een verscheidenheid aan vrij nieuwe methodologische benaderingen toe te passen, hebben we een gedetailleerder inzicht gekregen in de relatie tussen de speci-

fieke toepassing van (de)motiverend gedrag van docenten en indicatoren van student-betrokkenheid in de les. Dankzij onze onderzoeksmethoden konden we de relatie tussen motiverend docentgedrag en motivatie van studenten in lessen binnen dezelfde context van het Graafschap College op grondige wijze analyseren. Echter er zijn ook aan aantal beperkingen aan ons onderzoek.

Een belangrijke beperking van ons onderzoek is dat er slechts vijf docententeams en hun studenten aan één mbo college in Nederland deelnamen. Daarom zijn onze bevindingen beperkt te generaliseren naar mbo-docenten en mbo-studenten als geheel. Toekomstig onderzoek zou grotere steekproeven moeten nemen over meer scholen in verschillende regio's / landen, evenals verschillende opleidingen op verschillende niveaus om te bepalen welke aspecten van onze bevindingen verband kunnen houden met regionale en context specifieke factoren.

Omdat we ervoor gekozen hebben studenten uitspraken te laten doen over hun team van docenten en de betrokkenheid van de studenten te observeren voor de gehele klas studenten, kunnen we geen uitspraken doen over individuele verschillen tussen studenten en docenten. Voor toekomstig onderzoek zou het interessant zijn om het effect van motiverend lesgeven op de specifieke betrokkenheid van individuele studenten te verkennen. Dit zou kunnen uitwijzen of studenten die zeer betrokken zijn, ook meer ondersteuning ervaren en, tegenovergesteld, of studenten die meer negatieve betrokkenheid tonen, meer demotiverend gedrag van de docent krijgen, wat leidt tot een positieve of negatieve spiraal van gedrag in de les. Bovendien zou de impact van het (de-)motiverend docentgedrag kunnen verschillen per student afhankelijk van de individuele eigenschappen van deze student.

Hoewel observaties waardevolle inzichten geven over het specifieke gedrag in de klas ten opzichte van zelfrapportages, kunnen we niets zeggen over de cognitieve processen van docenten en studenten die verband houden met hun gedrag. We hebben ook geen zicht op de onderliggende motieven of behoeftesatisfactie of frustratie op het moment dat een bepaald gedrag gesteld wordt. Om hieraan tegemoet te komen werd in het verleden gebruik gemaakt van video-vignetten waarbij lstudenten zich inbeelden een student te zijn in de les die hen getoond werd. Een beperking van deze video-vignetten is dat ze geënsceneerd zijn. Voor toekomstig onderzoek zou het daarom ook interessant kunnen zijn om een meer kwalitatieve benadering aan het onderzoek toe te voegen, zoals "stimulated recall interviews" waarin deelnemers reflecteren op hun werkelijke gedrag en de motieven erachter bij gemaakte video-opnames. Dit zou meer kunnen vertellen over of studenten de toepassing van motiverend gedrag ook daadwerkelijk als motiverend ervaren.

Voor toekomstig onderzoek zou het interessant zijn om binnen het onderzoek te kijken naar macro-, meso- en microniveau, om meer recht te doen aan alle aspecten van het motiverende klimaat van scholen (d.w.z. hervorming van de hele school). Dit vraagt om een interdisciplinair onderzoeksprogramma dat zowel onderzoek vanuit onderwijsperspectief als Human Resource Management (HRM) combineert met zowel kwalitatieve als kwantitatieve analyses. Op mesoniveau kan het algemene motivatieklimaat van de school onderzocht worden met mogelijke belemmeringen die docenten ervan zouden kunnen weerhouden om op een motiverende manier te werken. Vervolgens kunnen op het niveau van de opleiding (macro), het curriculum, de assessments en het lesplan worden geanalyseerd om te onderzoeken in hoeverre deze op een motiverend manier zijn ingericht. Met behulp van een meer systematische en gecontroleerde benadering van dataverzameling met analyses op meerdere niveaus, kunnen effecten van motiverend onderwijsgedrag op de verschillende aspecten van studentenbetrokkenheid verder inzichtelijk gemaakt worden binnen het microniveau van de les.

**Praktische implicaties**

Voor docenten kan het zich bewust zijn van motivatie, de mate van testangst en het geloof in eigen kunnen van studenten helpen om zich in te leven in hun studenten. Aan de hand van kennis van de onderwijsgeschiedenis van hun studenten kunnen zij betere ondersteuning bieden in het doorbreken van de negatieve spiraal richting uitval. De grote groep studenten met een lage kwaliteit van motivatie maakt het voor docenten misschien moeilijker om motiverende gedragingen op een goede manier in te zetten, maar gezien de resultaten wel van groot belang.

Als zodanig bieden onze resultaten zeer relevante inzichten voor de professionalisering van docenten en het ontwerpen van interventies. Bij de start van de lessen kunnen docenten studenten betrekken door enthousiast te zijn, vragen te stellen in combinatie met een zinvolle uitleg om het eigen initiatief van studenten op te roepen. Om de betrokkenheid van studenten verder te ondersteunen, kunnen docenten studenten al vroeg in de les opdrachten geven, waarin studenten kunnen leren door te doen, terwijl ze tegelijkertijd de ruimte geboden krijgen om te experimenteren. Bovendien kunnen docenten hun studenten tijdens de lessen betrekken door hen keuzes te bieden, ze te begeleiden tijdens het werk, hen te laten experimenteren en hen positieve feedback te geven. Hierbij is het geven van positieve feedback door docenten van bijzonder belang voor de actieve en positieve betrokkenheid van studenten, terwijl negatieve feedback behoorlijk nadelig was voor de betrokkenheid van studenten bij de les. Met zo een studentgerichte benadering van lesgeven ondersteunen docenten hun studenten bij het nemen van de leiding over hun eigen leerproces. Deze inzichten kunnen belangrijke aanknopingspunten bieden voor het vormgeven van interventies op het gebied van motiverend lesgeven.

In het kader van het toepassen van motiverend gedrag tonen de resultaten van dit onderzoek een dringende behoefte aan flexibiliteit in het toepassen van motiverend lesgeven. Dit onderzoek toont duidelijk aan dat verschillende motiverende gedragingen tijdens de lessen nuttig kunnen zijn om de actieve betrokkenheid van studenten te ondersteunen. Maar het impliceert ook dat de impact van dit gedrag afhankelijk is van de context. In een klas met studenten met interesse in creatieve vakken heeft een leraar misschien minder en ander motiverend leergedrag nodig dan in een klas met veel studenten die een totale afkeer hebben ten op zichte van creatieve vakken. Ten slotte hebben eerdere studies aangetoond dat interventies waarbij video-opnames worden gebruikt bij het trainen van docenten in het gebruik van motiverend leergedrag een positieve invloed hebben op de betrokkenheid van hun studenten.

Voor een optimaal effect van veranderingen in de klas (micro-niveau) is het echter van belang ook te kijken naar noodzakelijke aanpassingen op het niveau van de onderwijsinstelling. De impact van motiverend lesgeven in de klas wordt namelijk aanzienlijk vergroot wanneer de sociale context van de school de nodige ruimte biedt aan docenten voor de toepassing van motiverend lesgeven. Het is daarom van belang kritisch te kijken naar het motiverend klimaat van de school (ruimte voor docenten, mogelijkheden tot experimenteren, werkdruk) en het ontwerp van de opleiding (bijvoorbeeld, het curriculum, examenplannen, lesplannen en didactische werkvormen).

**Conclusie**

Met een fijnmazige onderzoeksaanpak hebben we meer licht geworpen op de complexiteit van de motiverende uitdagingen van studenten in het mbo in relatie tot het gebruik van (de)motiverend gedrag door docenten. Hoewel de motivatieprofielen van mbo-studenten divers zijn, is er een relatief grote groep studenten die zich voornamelijk verplicht voelt om te studeren. Observaties laten vergelijkbare resultaten zien, waarbij studenten voornamelijk lessen volgden zonder actief betrokken te zijn. Verder tonen de drie studies binnen dit proefschrift aan dat het gebruik van motiverend gedrag een veelbelovende manier kan zijn om de motivatie van studenten voor school en hun betrokkenheid bij specifieke lessen te bevorderen. De resultaten toonden daarnaast aan dat als docenten willen dat studenten actief deelnemen aan de les, ze een bredere variatie in hun manier van motiverend lesgeven kunnen toepassen. Met name positieve feedback, ruimte om te experimenteren, ondersteuning en begeleiding bieden terwijl studenten aan oefeningen werken en vragen stellen, ondersteunen de actieve betrokkenheid van studenten. Dit vraagt een meer student-georiënteerde aanpak van docenten met betrekking tot lesgeven en een focus op het zelfregulerend leren van studenten met flexibel gebruik van motiverend gedrag, afhankelijk van de context en situatie.